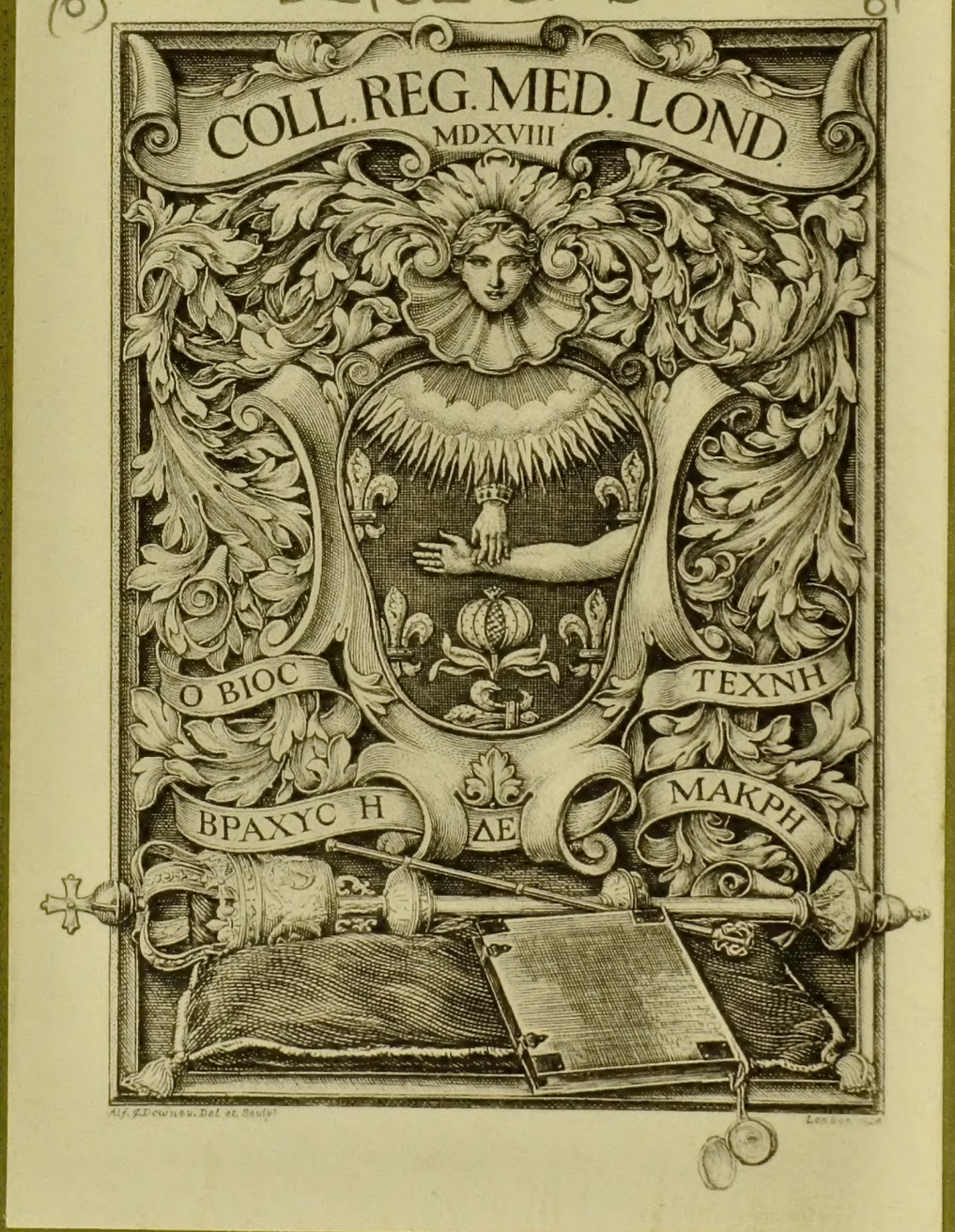

THE

PRINCIPLES AND PRACTICE

OF

MEDICINE;

FOUNDED ON THE MOST EXTENSIVE EXPERIENCE

IN

PUBLIC HOSPITALS AND PRIVATE PRACTICE;

AND DEVELOPED IN A

COURSE OF LECTURES,

DELIVERED AT

UNIVERSITY COLLEGE, LONDON;

BY

JOHN ELLIOTSON, M.D., CANTAB.; F.R.S.

PRESIDENT OF THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY; PRESIDENT OF THE PHRENOLOGICAL SOCIETY; LATE PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE, AND OF CLINICAL MEDICINE, AND DEAN OF THE FACULTY OF MEDICINE, IN UNIVERSITY COLLEGE, LONDON; LATE SENIOR PHYSICIAN TO THE UNIVERSITY-COLLEGE-HOSPITAL; FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS; FORMERLY PHYSICIAN TO ST. THOMAS'S HOSPITAL; AND PRESIDENT OF THE ROYAL MEDICAL SOCIETY OF EDINBURGH.

WITH NOTES AND ILLUSTRATIONS;

BY

NATHANIEL ROGERS, M.D.

MEMBER, AND LATE PRESIDENT, OF THE HUNTERIAN SOCIETY OF EDINBURGH; AND CORRESPONDING MEMBER OF THE MEDICO-CHIRURGICAL SOCIETY OF DUBLIN.

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TO

HENRY, LORD BROUGHAM,

BARON BROUGHAM AND VAUX; F.R.S.; MEMBER OF THE NATIONAL INSTITUTE OF FRANCE;

THE ABLE, LIBERAL, AND ENLIGHTENED PROMOTER OF KNOWLEDGE IN ALL ITS DEPARTMENTS;

TO WHOM THE

LITERATURE OF THE COUNTRY IS INDEBTED FOR SOME OF ITS BRIGHTEST ORNAMENTS;

AND THE COUNTRY ITSELF FOR SOME OF ITS BEST LAWS;

WHOSE EXERTIONS THROUGH THE PRESS, AT THE BAR, AND IN THE SENATE, HAVE RAISED FOR HIM

"A MONUMENT MORE DURABLE THAN BRASS;"

WITH

PROFOUND ADMIRATION

OF HIS TRANSCENDENT TALENTS;

BUT STILL GREATER RESPECT FOR THEIR APPLICATION,

THIS VOLUME IS INSCRIBED,

BY HIS OBEDIENT SERVANT,

THE PUBLISHER.

PREFACE.

One of the most striking circumstances which have distinguished the Medical Literature of recent times, is the publication of the Lectures of various eminent Professors. Till within the last few years, hospital-theatres, as well as hospital-wards, were (except to the limited number of attendant pupils) as "a spring shut up," and "a fountain sealed." It would have been of the greatest advantage to medical men, and through them to the public at large, could these class-rooms have contained the whole profession. But what the architect could not do, the printer has done. He has given the Lecturer a voice, which penetrates as far as our language is known; and the results of his study and experience have been wafted, on the winds of heaven, to every quarter of the globe. Beginning with Sir Astley Cooper, the masters of our art, in brilliant succession, have thus been enabled to pour the accumulated treasures of their knowledge at our feet.

The name of Elliotson stands too high in the estimation of the Medical Profession, to require any apology for the publication of his Lectures;—replete, as they are, with sound practical information;—the result of long and extensive experience. There can be little doubt, therefore, that the present undertaking will be hailed with satisfaction; and that a due share of support and encouragement will be

awarded to the enterprising Publisher, for producing this work in a style commensurate with the valuable information it contains.

The duty of the Editor has been plain and direct; and he hopes the manner in which it has been performed, will meet the approval of the Profession. No liberties have been taken with the sense; which has, in every instance, been strictly adhered to. The alterations, numerous as they are, have been confined to the language; which has been carefully revised throughout. The repetitions and recapitulations incidental to vivâ voce delivery, have been expunged; the mistakes of the reporter have been corrected; long sentences have been broken up into more manageable masses; intricacies have been unravelled, and asperities smoothed; lengthy parentheses have been advanced to the dignity of independent sentences; and the greatest pains have been taken to convey information the most valuable, in language the most perspicuous. It is with much pleasure, and with full confidence as to the result, that the volume is now placed in the hands of the Profession.

N. ROGERS.

3, Sussex Terrace, Kentish Town;
February 1, 1839.

PRELIMINARY OBSERVATIONS.

THE Art of Medicine is to be perfected, I conceive, by improvements in our knowledge of the nature of diseases, by improvements in diagnosis, and by improvements in our acquaintance with remedies and their application.

Improvements in our knowledge of the nature of diseases, must be obtained through the cultivation of Anatomy and Physiology, and of Morbid Anatomy and Morbid Physiology; or, in other words, from an acquaintance with the derangements that take place in structure and function. It is evident that no one can be acquainted with a disease, unless he be acquainted, more or less, with the part diseased,—its situation, form, and structure; and the more accurate and minute his acquaintance with these particulars, the greater (cæteris paribus) will generally be his knowledge of the lesion. I say "cæteris paribus;" because a mere knowledge of Anatomy, however accurate and minute, does not imply a knowledge of disease,—its symptoms, history and causes,—or skill in treating it;—any more than a knowledge of the alphabet, and the ability to read, imply a literary character. Nothing can be more absurd than for the public to presume that a man is a good practitioner, merely because he is a good anatomist. An anatomist is not necessarily even a physiologist; and Mery was accustomed to say,—"We anatomists are like the porters of Paris; who are well acquainted with all its streets, as well as all its lanes and alleys; but who know nothing of what passes within the houses." The most assiduous examination of the dead body, can disclose but little of the functions and properties of a living one. The structure of the brain would never teach us that it is the

organ of thought and feeling; or the structure of the kidney that it produces a fluid containing lithic acid and urea. The sympathy existing between the nasal mucous membrane and the diaphragm, and between the kidneys and the skin; the curious phenomena resulting from contagions and malaria; the various morbid actions to which various parts are liable; the innumerable diseases of the nervous systems; the susceptibility of various parts to the operation of various agents during health;—such as of the mouth to the operation of mercury, and of the stomach to that of ipecacuanha; the peculiar power of certain substances over certain diseases;—as of quinine over intermittent fever; all this would never be suspected at the dissecting-table. And I cannot refrain from remarking, that for any one to pride himself on his knowledge of established anatomy, would be exceedingly weak; as it requires no preparatory philosophical education, and no intellectual exertion; but merely the possession of eyes and memory, and a willingness to employ them. Dr. Mc Culloch, in his recent powerful, though I must be pardoned in saying occasionally extravagant work, on Marsh-Fever and Neuralgia, apologizes for not arranging his cases anatomically; on the ground that it would have savoured of pedantry;—"a small pedantry," he says, "far too common; as if any man could not make himself master of Human Anatomy in a few weeks, as well as of any other tangible and demonstrable substances." But if it would be laughable for any one to pride himself on his knowledge of Anatomy, it is culpable in a physician not to be a good anatomist. In such a case he cannot comprehend the phenomena of many diseases. For example,—he cannot understand why, in partial paralysis of the head, sometimes only certain muscles cease to obey the will; why loss of sensation sometimes occurs alone, and why to only a certain extent; why the pain of neuralgia takes a particular course; or why, in disease of the heart, unusual varieties of sound and impulse are observable in particular portions of the cardiac region. He cannot possess any but the most superficial knowledge of Morbid Anatomy; the cultivation of the far greater part of which, is peculiarly the duty of the physician, who treats the chief morbid states of the most important organs of the body; and not of the surgeon, who does not even witness the symptoms; and he will, therefore, either neglect to complete the investigation of his unsuccessful cases, by examination after death; or he will be unable to appreciate what presents itself; and will perhaps be indebted to an active surgeon for information.

The importance of Physiology requires no argument in its sup-

port; for, except in obvious structural or mechanical changes, the symptoms of disease are chiefly Morbid Physiology. To quote the familiar passage of Galen,—"The magnitude of a disease is proportionate to its deviation from the natural state; and only he knows the extent of the deviation, who knows exactly what is the natural state." Without a thorough acquaintance with both the natural structure and the functions, a thousand highly interesting deviations will never be recognized in the cases which come daily before us.

If such be the importance of Anatomy and Physiology to every physician, the importance of perfecting these sciences to the progress of our knowledge of the nature of diseases, will not be disputed. But however necessary Anatomy and Physiology may be as foundations, the grand source of this knowledge is the observation of the phenomena of diseases,—their symptoms, history, and causes (in other words, Pathology); and of structural lesions (in other words, Morbid Anatomy). No one expresses a doubt respecting the importance of Pathology;—the importance of observing the symptoms, and tracing the history of diseases; and of investigating their peculiarities, analogies, and causes. Yet, in all this, how liable are we to error. How patient and searching an eye is required to note all the phenomena of a disease;—to perceive what is essential to a disease, and what is only incidental! How profound a judgment to reason upon these phenomena, and to investigate their causes;—to discern the analogies between affections which, at first sight, are perfectly distinct! And, at the same time, how *cool* should be the judgment duly to appreciate all fanciful analogies,—all hypothetical suggestions! Exactly the same difficulties surround Morbid Anatomy; but in its case they are alleged, by some, as objections to its prosecution. But how could any affection beneath the surface of the body have been understood, without an ocular investigation of the parts affected? How could pain in the chest, dyspnœa, cough, and pyrexia, have been known as signs of inflammation of the lungs or their membranes, unless the examination of persons who died under these symptoms, had proved such a lesion to be frequently their cause? If knowledge can be thus obtained, why not obtain the utmost degree of it possible? True it is that *incidental* morbid appearances, have often been mistaken as necessary or *constant*; and that some pretty constant appearances have often been absurdly announced as the *essence* of the disease, when they were merely its *effect*; or, at the utmost, only among the number of its phenomena. Equally true it is that changes after death have been

mistaken for morbid appearances; as was pointed out by Dr. John Davy, in the case of redness from the imbibition of blood. But such errors surely afford no reason for neglecting careful and extensive examinations of diseased parts; and drawing just inferences as to the connexion of the change of colour or structure with the disease;—they supply no reason for not cultivating so ample a field of knowledge scientifically. If a disease be accompaniad by a change of structure or appearance *within* the body, surely this change, as a fact in the disease, is worthy of notice; as worthy as *visible* changes of the skin, the mouth, or the eyes; which changes are always carefully described by these objectors, even when merely secondary effects; though they differ from the facts of Morbid Anatomy only in the accident of being cognisable without dissection; while they are not a whit more necessary to a perfect history of a disease, and are much less in number;—owing to the circumstance of nearly all our organs being concealed from view. After some diseases, indeed, no change of structure or appearance is discernible. But even here extensive anatomical investigation is important; for it often prevents us from forming groundless hypotheses, as to the seat and nature of such affections. Hydrophobia might be referred to the stomach, were it not that the red patches, which are sometimes seen in this organ after the disease, are frequently not to be detected. Tetanus might be thought always to arise from inflammation of the spinal marrow, were it not that this part is frequently found free from inflammation in tetanic patients. It discloses to us a fact which we might otherwise have doubted;—that diseases may be only functional, as well as structural;—that, in the words of one of the most intelligent and industrious cultivators of Morbid Anatomy and Pathology (Dr. Andral),—"it is one of the most serious errors to which the ill-directed study of Morbid Anatomy can lead, to admit no other alterations in the economy, than those which are discoverable by the scalpel." We learn, in short, to form a just estimate of Morbid Anatomy;—that it is an important *part* of the basis, but by no means the "*main* basis" of Pathology.

But if our art is to be perfected by a better acquaintance with the *nature* of diseases, it is not less to be perfected by improvements in *distinguishing* them;—by improvements in diagnosis. The diseases of the lungs and their membranes, are as well understood as any of the body; yet the best practitioners continually fail in distinguishing them. They often fail, for instance, to distinguish one form of chronic bronchitis from hydrothorax; the treatment of which diseases

may be totally different. So important is diagnosis, that it has become a proverbial saying,—"the knowledge of a disease is half the cure." Diagnosis is also to be improved, not only by a better acquaintance with the symptoms and history of diseases, but by a better acquaintance with Morbid Anatomy; so that the correspondence between symptoms and local lesions may be established, and the affection may thus be clearly ascertained. As healthy Anatomy is the foundation of Morbid Anatomy, and Physiology is the foundation of Pathology, the importance of these also to improvements in diagnosis, is apparent.

The discoveries made by Laennec with respect to diseases of the heart and lungs, are great enough to entitle him to all the honours which have ever been acquired in our profession. He has enabled us to judge of diseases which, by any other method than his own, are often not to be distinguished with certainty, or even not at all; and he has enabled us to do this with an accuracy, which is inconceivable to those who are unacquainted with his investigations. He has enabled us to distinguish diseases of the heart; which were formerly, and are still, too often either all expressed by the easy term,—"disease of the heart,"—without any specification of the particular part of this complicated organ affected; or are as often passed over entirely;—the case being mistaken for hydrothorax, or some pulmonary affection. He has also enabled us to distinguish diseases of the lungs which, in many cases, could not be pronounced upon with accuracy, and in others of which the diagnosis was always uncertain. Moreover he has enabled us to point out the very part affected.

But Laennec's discoveries are objected to, on the very ground of their accuracy. We are asked,—"cui bono?" The answer is plain. It is universally allowed that every disease should be described, and its nature ascertained, as accurately as possible. Now, with every advance in accuracy of description, and in knowledge of the source of symptoms, diagnosis imperceptibly and inevitably becomes more accurate. To condemn accurate *diagnosis*, therefore, is to condemn accurate *knowledge*. It is to rest satisfied with imperfect information, when industry would give us more. It is to admire ignorance, when knowledge is within our reach.

Besides, the art of diagnosis ought to be universally cultivated, without reference to its utility in particular instances. It is part of our science; and every part must be cultivated, with a view to the perfection of the whole; for what may not be practically useful to-

day, may become so to-morrow. How many discoveries in Chemistry and Natural Philosophy appeared, at first, to be objects of mere curiosity; though they have afterwards been applied to the most important purposes! Plato entertained so enobled a feeling for science on its own account, that he considered the applications of geometry to practical purposes, as far inferior to its philosophy; and those who may see no reason for being so deeply enamoured of science as that, must allow that there is every reason to remember the words of Jesus, the son of Sirach:—"None may say,—'what is this?—wherefore is this?'—for, at a time convenient, shall they be all sought out." In improving diagnosis, it is impossible to discover only what is obviously useful. The research must be made *generally*; and what is at once useful, and what is not, must turn up together. In the diseases of other organs, we always aim at accuracy of diagnosis, without any hope of utility. When a solid tumour exists in the abdomen, we endeavour to ascertain whether it is the liver, the spleen, the pylorus, an ovarium, a new formation, or something else; although the treatment would probably be the same for all.

But there *is* immediate utility in the discoveries of Avenbrugger and Laennec. No one will pretend that, in chronic diseases of the chest, —with the exception, perhaps, of phthisis,—the diagnosis is generally satisfactory. Before I adopted auscultation, I frequently discovered disease of the heart after death, where I had not previously suspected it; and frequently found the organ sound, when I had supposed it to be diseased. Even when I was correct in expecting to see an organic affection of the heart, I was often wrong as to the precise nature of the lesion. Too often has auscultation revealed to me disease of the heart, when, by good practitioners, no affection of the heart, or even of the chest, had been suspected; or where the case had been named "nervous palpitation," or "asthma;"—where the lungs had been regarded as the seat of the malady; or where the case had been treated with the most violent remedies for hydrothorax. Repeatedly have I seen chronic bronchitis, with extreme congestion of the lungs, mistaken for hydrothorax. This was unavoidable, when percussion and auscultation were omitted; because the symptoms were precisely the same, with the exception of those which percussion and auscultation could alone disclose. Inflammation of the substance of the lungs continually takes place during the course of other diseases, without being obvious, before death, to any but the auscultator and percussor. Without the aid of the ear, who can

ever distinguish emphysema of the lungs, or, in every case, pneumatothorax? Both may readily be mistaken for hydrothorax. The symptoms may be a pallid face, purple lips, orthopnœa, sudden starting from sleep to the waking state, a small and intermitting pulse, cold extremities, and swollen feet. The remedies of hydrothorax may appear indicated; but the ear will discover a hollow sound,—far *too* hollow a sound in the chest, at its very lowest parts; while there is, in the first case, very little respiratory murmur; and, in the second, none at all,—at the very place where the hollow sound is heard. Nothing but the ear can shew the nature of these cases. Nothing but the ear could distinguish them from each other. Without the ear, no case can be known with certainty to be one of hydrothorax, however marked the symptoms may be.

It has more than once happened to me, to be unable to form *any* opinion as to the nature of a disease, without auricular examination. Patients have complained of mere debility and loss of flesh, with slight general indisposition; and have declared themselves free from all local symptoms; so that nothing but the most random guesses could be made at their disease. A minute examination of them has discovered nothing wrong, or nothing *materially* wrong, in the performance of the functions of the head, chest, or abdomen; but, on percussing the chest, the sound, at some part, proved as dead as if the thigh had been struck; and, on applying the stethoscope, no respiration has been heard; or the voice has rushed through the instrument; or an unnatural sound has been heard in the heart; and thus the whole mystery has been at once cleared up. In truth, the exact state of the functions of the heart and lungs cannot be ascertained, except by the ear; and without an examination by its aid, no one is warranted in declaring those functions to be healthy. I once admitted a man into St. Thomas's Hospital, without any friend to give an account of him; and so deaf and stupid, that he could scarcely give any himself. He complained merely of occasional coldness, heat, and sweating; together with debility. He declared that he had been ill but two or three weeks; and ascribed his complaint to sleeping in a damp bed at Gravesend. The case resembled remittent fever, more than anything else; and I treated it with sulphate of quinine. The symptoms of remittent fever yielded; but the debility remained, and even increased. I investigated the case minutely. There were no symptoms of phthisis, or of any other local disease, except convexity of the nails. But, on striking the chest, I found the right superior part give a dead sound; and in the

centre of this I heard pectoriloquy. The case was then regarded as one of abundant tubercular deposition in the right lung, with an excavation in its centre; and the autopsy shewed that the diagnosis was correct. The diagnosis, it was clear, did not lead to a cure; but it prevented my plaguing the patient with medicines, from an erroneous idea of the nature and seat of the disease; and it enabled me to give a correct prognosis. Even when there can exist no doubt in the mind of an able practitioner, as to the seat and nature of the disease, auscultation may prove a useful aid. In consultation, another practitioner, from a peculiar bias towards the heart, may consider the symptoms to arise from that organ; although they are evidently pulmonic, and perhaps even phthisical; and *vice versâ*. Or perhaps he may refer unquestionable symptoms of organic pectoral disease of some kind or other, to the liver, or the digestive organs;—according to the reigning folly of the day. This is done, continually, with affections of the head and spine. It may be impossible clearly to refute him by the ordinary means of diagnosis; and yet auscultation may furnish symptoms of so decisive a nature as to silence him.

Auscultation, however, can never justify us in the least neglect of the general symptoms and history of a disease. This would indeed be unphilosophical; for the symptoms revealed by auscultation, are but one set among a number of others. But if it would be unphilosophical to neglect the general symptoms, it would be equally so to despise those which present themselves to the ear. If the functions of the heart and lungs are naturally performed with peculiar sounds, and if in diseases the sounds are altered, these deviations surely demand equal attention with those which are discernible by the other senses. Surely the physician requires all his senses for the acquisition of knowledge; as much as other prosecutors of natural science. We employ our eyes to discern the countenance, and general aspect of our patients; the changes of the pectoral, intestinal, and renal secretions; and alterations in the colour, size, and figure of various parts. We employ our touch to examine the pulse, and to ascertain the preternatural presence of fluid, preternatural enlargement, diminution, or induration. Our smell gives us information as to the depraved secretions of fever, as to suppuration, and as to gangrene. In the case of diabetes, some have even recourse to the sense of taste. Nay, certain symptoms observable by the ear only, are always carefully dwelt upon. Borborygmi, for instance, enter into the definition of hysteria; and all the varieties of cough and wheezing are described. Why then, should such sounds as are elicited by striking the chest,

or require the ear to be brought either into contact with it, or into connexion with it, by means of a solid medium, be despised? The celebrated Hook not only did not despise the ear, as an inlet of knowledge, but looked forward to the invention of acoustic instruments, which would enable it to make important discoveries. Indeed, he almost prophesied the stethoscope. "There may be a possibility," says he, "of discovering the internal motions and actions of bodies, by the sound they make. Who knows but that,—as, in a watch, we may hear the beating of the balance, and the running of the wheels, and the striking of the hammers, and the grating of the teeth, and multitudes of other noises,—who knows, I say, but that it may be possible to discover the motions of the internal parts of bodies (whether animal, vegetable, or mineral) by the sound they make;—that one may discover the works performed in the several offices and shops of a man's body; and may thereby discover what engine is out of order, what works are going on at several times, and be still at others; and the like.—I could proceed further; but methinks I could hardly forbear to blush, when I consider how the most part of men will look upon this. But yet, again, I have this encouragement;—not to think all these things utterly impossible; though never so much derided by the generality of men, and never so seemingly mad, foolish, and fantastic; and that, as the thinking them impossible cannot much improve my knowledge, so the believing them possible may perhaps be an occasion for taking notice of such things, as another would pass by without regard, as useless. And somewhat more of encouragement I have also from experience; that I have been able to hear, very plainly, the beating of a man's heart; and 'tis common to hear the motion of the wind, to and fro, in the guts and other small vessels. The stopping in the lungs is easily discovered by the wheezing.—As to the motion of the parts one amongst another,—in order to their becoming sensible they require, either that their motions be increased, or that the organ [of hearing] be made more nice and powerful, to sensate, and distinguish them as they are; for the doing of both which, I think it not impossible that, in many cases, there may be helps found."

Far be it from the defenders of auscultation and percussion to assert, that the diagnosis of thoracic diseases can never be doubtful. Skill in auscultation requires much application; and, even with the greatest, doubt will frequently exist. The stethoscope does not render the parietes of the chest transparent. Percussion and auscultation merely open a new set of symptoms to our notice; and, as

diagnosis is certain in proportion to the number and nature of the parts on which it is founded; and as the percussor and auscultator, with all the same means of judging as his opponents, possesses others in addition,—he is better qualified to form an opinion; and, though he may still sometimes regret his want of certainty, he knows that by shutting his ears,—by levelling himself with his opponents, he augments his uncertainty a hundred fold. Dr. Andral, who nowhere shews a disposition to overrate the nature of auscultation, and is a highly informed practical physician of the soundest judgment, says, in the preface to the second part of his "Clinique Medicale," —"Thanks especially to the wonderful discovery of Professor Laennec, the diagnosis of a great number of thoracic affections may frequently be established with as much accuracy, as that of the least complicated luxation, or the simplest fracture. There is a certain number of pneumonic inflammations, in which we are able to follow the different phases of alteration in the lungs, and of their return to the healthy state, with as strict precision as the eye follows the different periods of the cicatrization of an external wound. There are affections of the heart, in which the nature of the organic lesion may be determined, by the sense of hearing, almost as accurately as the state of a cutaneous tumour may be ascertained by the eye, or the state of the neck of the womb by the touch. Clinical observation, however, meets with many cases, in which diagnosis is obscure; and with others, in which the very nature of the affection is still a matter of dispute."

The alleged errors of those who practise auscultation, are no arguments against it. Many tales of this description, like those of the errors of phrenologists, have, when traced to their origin, proved inaccurate, or even altogether destitute of truth; and eagerly to catch at them would betray a mind that hopes no fresh knowledge is to be attained. Persons, it must be remembered, who have no skill, will pretend to it; and the skilful will sometimes give a hasty judgment. But, as in the case of Phrenology, nature is open to us all. Let us examine for ourselves;—examine carefully and patiently;—not anxious to find auscultation a deception;—but hoping to find the promise of new information fulfilled;—not unwilling to learn, because we are no longer *in statu pupillari*;—not so high in our own estimation, as to feel indisposed to be taught by others;—not unphilosiphical enough to have a hostile opinion, upon a matter which observation must decide;—not inconsistently lamenting the imperfection of our art, and whining about its sad claim to the title of "a conjectural

art;" while we are too indolent to investigate a method, which professes to remove much of its uncertainty; which is recommended by men of the greatest talent, and the most intense application to the study of their profession; which bears upon itself the stamp of probability; and the results of which, indeed, are capable of being proved physically inevitable. The greatest discoveries have generally been ridiculed at first; and their authors, no less than all the greatest benefactors of the human race, have been "despised and rejected of men." Let us remember that Harvey, whose memory *we* honour, was *dis*honoured at first by his cotemporaries, for the discovery which immortalized his name;—that he lost his practice; and, so far from finding comfort among his brethren, left the country, and was lampooned from one end of Europe to the other; and that no English physician who had attained the age of forty at that time, ever, to the end of his life, acknowledged the circulation of the blood. Let us remember that Sydenham, whose memory also *we* honour, was called a quack and a murderer by many of his cotemporaries; whose names, whatever bustle they made during life, have never once been mentioned since their death. Let us remember that the discovery of the lacteals was at first rejected with contempt;—that Bartholin, in a letter says,—"There is not one among the doctors of Montpellier, who acknowledges the lacteal vessels;—so wedded are they to the authority of Galen; for which they contend as though it was 'pro aris et focis;' and disregard the experiments of the moderns." Let us remember that even old Harvey, when the thoracic duct was afterwards discovered, could not at once loosen himself from the bonds of early prejudice, and give up the prevailing belief that the lacteals all terminated in the liver; and that the very Bartholin who saw the folly of the Montpellier doctors, never believed in the exclusive office of the thoracic duct. Let us remember that, if the illustrious father of our modern philosophy (Bacon) was not vilified and imprisoned, like Galileo, for announcing truth, he was represented by Cecil to Elizabeth (when she thought of making him her Solicitor-General) as "a man of mere speculation;"—as "one wholly given up to philosophical inquiries,—*new*, indeed, and *amusing*; but *fanciful* and *unsound*; and therefore more likely to distract her affairs, than to serve her carefully and with proper judgment." Finally, let us remember that, in ancient times, Horace saw his odes despised, because they were new!

I cannot forbear making the following extract from the first volume of Gall's work, on the Functions of the Brain.—"The

followers of the different schools of philosophy among the Greeks, accused each other of impiety and perjury. The people, in their turn, detested the philosophers; and accused those who investigated principles, with presumptuously encroaching on the rights of the Deity. The novelty of Pythagoras's opinions, caused his banishment from Athens; those of Anexagoras threw him into prison; the Abderites treated Democritus as a madman, because he dissected dead bodies, in order to discover the cause of Insanity; and Socrates, for demonstrating the unity of God, was condemned to drink hemlock. The same scandal has been renewed at all times, and among all nations. Many of those who, in the fourteenth century, distinguished themselves by their knowledge of natural things, were put to death as magicians. Galileo, for proving the motion of the earth, was imprisoned at the age of seventy. Those who first maintained the influence of climate upon the intellectual character of nations, were suspected of materialism. Universally, nature treats new truths and their discoveries in a singular but uniform manner. With what indignation and animosity have the greatest benefits been rejected! Look, for instance, at potatoes, Peruvian bark, and vaccination! As soon as Varolius made his anatomical discoveries, he was decried by Sylvius as the most infamous and ignorant madman. Varolius was reproached with dazzling his auditors by a seductive eloquence; and with artificially effecting the prolongation of the optic nerves, as far as the thalami. Harvey, for maintaining the circulation of the blood, was persecuted; and depravity went so far, as to attempt his ruin with James and Charles the First. When it was no longer possible to shorten the optic nerve, or to arrest the course of the blood in its vessels, the honour of these discoveries was, all at once, given to Hippocrates. The truths in Natural Philosophy announced by Linnæus, Buffon, the pious philosopher Bonnet, and George le Roy, were represented as impieties, likely to ruin religion and morality. Even the virtuous and generous Lavater was treated as a fatalist and a materialist. Everywhere do fatalism and materialism, placed before the sanctuary of truth, make the world retire. Everywhere do those upon whose judgment the public rely, not merely ascribe to the author of a discovery the absurdities of their own prejudices; but they even renounce established truths, if contrary to their purposes; and revive ancient errors, if calculated to ruin the man who is in their way. This is a faithful picture of what has happened to me. I have, therefore, some reason to be proud of having experienced the same lot as men to whom the world is

indebted for so great a mass of knowledge. It seems that nature has subjected all truths to persecution, in order to establish them the more firmly; for he who can snatch one from her, always presents a front of brass to the darts hurled against him, and has always force enough to defend and establish it. History shews us that all the efforts and sophisms which are directed against a truth once drawn from darkness, fall like dust blown by the winds against a rock! The instances of Aristotle and Descartes should particularly be quoted, when we wish to display the influence of prejudice upon the good or bad fortune of new doctrines. The opponents of Aristotle burnt his books. Afterwards, however, the books of Ramus, who had written against Aristotle, were burnt; the opponents of the philosopher of Stagira were declared heretics; and it was even forbidden by law to dispute his doctrines, under pain of being sent to the galleys. There is now no longer any discussion about the philosophy of Aristotle. Descartes was persecuted because he taught the innateness of ideas; and the University of Paris burnt his books. He had written the most sublime thoughts upon the existence of God; but Noel, his enemy, accused him of atheism. Afterwards the same University declared itself in favour of innate ideas; and when Locke and Condillac attacked innate ideas, the cry of 'materialism' and 'fatalism' resounded on all sides! Thus, the same opinions have, at one time, been regarded as dangerous because they were new; and, at another, as useful because they were ancient. We must, therefore, pity mankind; and must conclude that the opinion of cotemporaries, as to the truth or error, and innocent or dangerous tendencies of a doctrine, are very suspicious; and that the author of a discovery should be anxious only to ascertain whether he has really discovered a truth or not."

Gall might have added, in the words of Professor Playfair, that notwithstanding "the splendour of Newton's discoveries; the beauty, simplicity, and gradeur of the system they unfolded! and the demonstrative evidence by which that system was supported,—the Cartesian system of 'vortices' kept its ground for more than thirty years after the publication of those discoveries;" and that actually "the Newtonian philosophy first entered the University of Cambridge under the protection of the Cartesian!" This was effected by Dr. Samuel Clarke; who quietly explained the views of Newton, —without any appearance of argument or controversy,—in the form of notes to a new translation which he published of the French Cartesian work, long established as a text-book by the tutors of the

University. Dr. Chalmers, speaking of the first reception of the Newtonian philosophy, says that "authority scowled upon it; taste was disgusted by it; and fashion was ashamed of it."

With respect to the third mode in which I conceive that our art must be perfected (improvements in our knowledge of remedies, and their application) I must be brief. Much remains to be accomplished in the discovery, both of the virtues of medicines already in use, and of new medicines, or such modifications of old ones, as almost entitle them to the epithet "new." Every advance in our knowledge of the essential nature of diseases, will no doubt enable us to improve our application of remedies upon general principles;—to improve our "general indications." But without any additional knowledge of the nature of diseases, cautious trials,—guided by the best analogy we may discern, or by some fortuitous occurrence, will enable us (if we are disposed to labour) to effect much in extending our knowledge of the powers of particular remedies over particular diseases. Lord Bacon regrets that physicians apply themselves so exclusively to general indications;—neglecting the peculiar properties of remedies in particular diseases. Such experimental facts, however insulated they may at first appear, gradually arrange themselves, with others, into general principles; and thus what is, at first, little better than empiricism, becomes science. I confess that I look with more hope to this source of improvement, than to any other.—*Extracted, with some modifications, from Dr. Elliotson's Lumleyan Lectures on Diseases of the Heart.*

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THE

PRINCIPLES AND PRACTICE

OF

MEDICINE.

INTRODUCTION.

From the want of a University, Medicine and Surgery were, for a long time, scarcely taught in London at all, notwithstanding the ample means presented by the population and the hospitals. The student was compelled to travel to France, Holland, or Italy, or, in later times, to Germany or Scotland, for the purpose of acquiring a true professional education; our own two Universities neglecting almost entirely to teach Medicine;—whether from the want of anatomical and clinical means, the hopelessness of rivalling the great continental and Scottish schools, or the idea that their proper end was to teach general knowledge,—to impart only what all educated persons should know; or from the circumstances mentioned in a powerful and remarkable article, in the 108th number of the Edinburgh Review, upon the Universities of England:—The Ascendancy of the Colleges over the University;—the subversion of the professorial system by the tutorial. Time was (says the reviewer) when the Colleges did not exist, and the University was there; and were the Colleges again abolished, the University would remain entire. When the University was paramount, the cycle of instruction was distributed among a body of teachers, all professedly chosen from merit, and each concentrating all his ability on a single object; and the whole youth of equal standing in the University, daily collected into large classes under the same professor; whereas the colleges and halls are now elevated into so many little universities; into which the students are distributed (with little regard to ability or standing) among some fifty tutors, who are chosen from the fellows; notwithstanding that the fellowships were not founded for the purposes of teaching, and that the fellow rarely owes his eligibility to merit alone, but also, in the majority of cases, to some fortuitous circumstances.

The opportunities of teaching Anatomy, Surgery, and Medicine,

in London, however, became at length too great to be entirely thrown away; and the surgeons of the hospitals began to deliver lectures on Anatomy and Surgery, and afterwards the physicians upon Medicine. These lectures were of limited extent; nor were systems of courses, for a time, delivered so as to constitute regular schools. The time, the trouble, and the expense of travelling to a University of medical reputation, rendered the emolument fairly to be expected on establishment in practice too high for the mass of the people to afford; and as population increased, and more practitioners were demanded, home medical instruction was sought after by greater numbers every year;—and this the more, as any one could practise without the license or authority of any University.

The lectures improved, and at length regular schools were established; yet, as they were all private, and could confer no privileges or honours, those who required degrees went to the old celebrated schools; while those whose only resource was the private schools, had too limited pecuniary means to devote much above a year to public study; so that these metropolitan schools remained scanty and superficial. The whole of Anatomy and Physiology, and Morbid Anatomy together, were disposed of in a course of little more than three months; the Practice of Medicine, and the science of Chemistry, each in the same period, with only a lecture of one hour's duration three times a week. Much of General Pathology, and Forensic Medicine, was altogether omitted; and the whole of Medical Police, and the literature of the profession, were passed over. Things remain still in the same state, except that courses on Forensic Medicine are now about to be delivered.* It was left for this University† to be bold enough to establish courses of six months' duration; in which full scope would be afforded to the professors of laying before the student the whole body of medical science; to add the charms of varied illustration; to inculcate important points earnestly and repeatedly; and to introduce the student to an acquaintance with medical literature.

The mode of instruction by lecture, though by no means sufficient of itself, is in my mind of high importance. When a whole subject can be taught in a solitary course of lectures, and the exhibition of nothing is required, so that a mere delivery of statement constitutes the whole task of the professor, there can be no doubt that a good work, containing all the same information, might be studied in private with equal benefit; and, indeed, with this greater advantage;—that it would probably, after costing less, remain in the possession of the student, to be consulted by him whenever he might think fit. But when a circle of instruction is required;—when the subjects are numerous, and demand many courses of lectures, and many professors, the student cannot be committed to himself. Without lectures he would become almost to a certainty bewildered, studying at irre-

* These observations were made at the commencement of the session 1831-2.

† The University of London; or, as it is now called, University College.

gular intervals, wandering from one subject to another, and getting little fruit from any; whereas the attendance on various lectures, at stated hours, creates an excitement and an interest, as well as a regularity of habit, which are of incalculable utility.

In our science and art, however, lectures are, on another account, of superior advantage,—indeed indispensable. One part of the office of every medical lecturer, is to describe objects of sense. The attempt to learn Anatomy, Physiology, Chemistry, Materia Medica, or Botany, would be ridiculous, without the inspection of the material objects, and the principal phenomena. Of the Practice of Medicine and the Practice of Surgery, the same is true. The professor neither of the one, nor of the other, can give his pupils a full idea of the phenomena of diseases, or of the administration of remedial means, without patients exhibiting the various phenomena of disease, and subjected to the exercise of our art. As cases, however, cannot be had at pleasure, so as regularly to illustrate a systematic course of lectures, it is indispensable to deliver the general description and history of diseases and their treatment, in a distinct course; and to afford the illustrations from life in a totally separate manner, as they incidentally present themselves in a collection of patients. It is indispensable that there should be both a general course, and clinical instruction. Yet, in the general course, material illustration is both possible and necessary. Representations of the various morbid changes (by copious and well-executed drawings, engravings, and models), and actual specimens of these changes, and all the material products of disease, it is the duty of a teacher to present and explain; although, when I was a student in Edinburgh, the professor of Medicine never exhibited a single drawing, or a morbid specimen. In these respects the University of London affords me great advantages. The museum is excellent; and with the assistance of the profession, may become unrivalled. And here I intreat the profession to contribute to it;—to preserve what morbid specimens they can, and deposit them with us; remembering that we have no hospital to supply us, and must depend entirely upon individual contribution; remembering, likewise, that our museum is of far greater utility, than any others unconnected with a school;—that, while those are open only to the inspection of the profession, not merely is this open to the profession, but every preparation in it is laid distinctly before the students, and employed by the professors as a means of instruction: I therefore intreat the practitioners of this vast metropolis to render it, as they readily can, and at no expense, one of the first pathological museums in Europe. The drawings possessed by the University are, I believe, unrivalled;—at least I have no where else seen such a collection. Their accuracy and beauty, their scale, and their numbers, are the admiration of all who have seen them; and reflect such credit upon Dr. Carswell, that he requires no panegyric of mine; and when the short period in which they were executed is considered, his industry becomes equally a subject of admiration with his talents.

In the other great mode of instruction in the Practice of Medicine and Surgery, the University fails; and our school can never deserve the name of a great medical school while the defect exists:—a hospital is imperiously necessary. It is true that we have a dispensary; but a dispensary must always be a miserable substitute to the student for a hospital. No medical University would grant the degree of Doctor in Medicine, to any who had frequented merely a dispensary. At a dispensary the majority of patients are so little indisposed, as to be able to go about. When seen, they necessarily pass in rapid review before the practitioner; giving him an opportunity of showing how practice may be dispatched, rather than how disease should be investigated: for, if the time demanded for the scientific and patient investigation of each case, and for demonstration and explanation to the pupil, were given, the poor creatures would be compelled to lose, in attending at the charity, far more time than their condition in life or their strength would allow. There is, besides, no certainty among the patients of a dispensary, that medicine is regularly taken;—no possibility of fixing their diet;—no certainty of their continuing to attend, so that each case may be regularly followed up to its conclusion;—no possibility of making daily observations. When cases are severe, and the patients confined at home, there is not only the same uncertainty of strict attention to the injunctions respecting medicines and diet, but the student must lose a great deal of time in running from one house to another; and the physician or surgeon will not visit all such patients daily with his pupils; and, indeed, his pupils cannot accompany him in these visits, with any degree of regularity. In an hospital the patients are compelled to obey every injunction; and being under the same roof, they may be seen at pleasure any hour of the day, without loss of time; so that long and repeated observation of their cases is easy. When death occurs to a dispensary patient, and an examination is permitted, the student loses still more time; for he not only must go to the house of the family, but prepare the body, and afterwards reinstate it; and, in all probability, will seldom be accompanied by the physician or surgeon. At hospitals the examination takes place without any loss of time; the student has no where to go; servants prepare, and sew up, and wash the body; and the physician or surgeon usually superintends the inspection. So superior are the advantages of hospitals, that, as I have already remarked, certificates of attendance upon them are required at all medical Universities, previously to examination for the doctorate; and although certificates of attendance at dispensaries are admitted by the Apothecaries' Company of London, and may be obtained at a cheaper rate than those of hospitals, the majority of English medical students voluntarily enter themselves to the medical practice of hospitals. The inferiority of dispensaries is, indeed, acknowledged by their medical officers, in the greater cheapness of their terms; and the Apothecaries' Company declare it, in their demand of a longer attendance at them than at hospitals. It is, therefore, much to be

lamented that the Apothecaries' Company admit dispensary attendance at all; for if, of the short period enjoyed by the medical pupil for the public study of his profession, a certain portion is necessarily devoted to witnessing cases, that portion should evidently be spent in witnessing them in what is acknowledged to be the most efficient manner; and if eighteen months can be spared for witnessing *dispensary* practice, they can be spared for witnessing *hospital* practice. Those who cannot see the necessity of hospital attendance,—for the purpose of witnessing, without any loss of time, the most important diseases, and their minute investigation, and accurate and unrestrained treatment by the physician,—cannot but admit the necessity of hospital attendance for the purpose of witnessing the great accidents, and operations of surgery. The College of Surgeons can receive no certificates of attendance upon the surgical practice of dispensaries. If, therefore, the student must attend a hospital for half his experience, it is indisputably best that he should acquire the other half within the same walls. In uttering these, my sincere convictions, I feel some delicacy, because I am a hospital physician. But those who know me will, I am sure, acquit me of any interested motive; and, in truth, the medical clinic of St. Thomas's is frequented to the utmost of our desire; and I am not likely to have it in my power very long to remain attached to that great Institution. I will not scruple to add, that I think the student pays too much for hospital attendance in London; that the entrance should not be to medical or surgical practice alone, but to the whole range of the hospital; and that the sum which is paid to witness the surgical practice only, would be a sufficient remuneration for the surgeons and physicians together; and I should rejoice to see the most meritorious among the senior students, rewarded gratuitously with the appointments of dressers to the surgeons, as well as of clinical assistants to the physicians. The last argument I will urge in favour of hospitals is, that they are also dispensaries. They have a dispensary department, in which patients are attended to the same amount as at mere dispensaries. Besides all the inmates of St. Thomas's, the greater part of ten thousand out-patients are attended; and, although none are visited at home, this might readily be done without any farther trouble or expense, by the senior and best-informed students; to whom such a trust would be an incalculable benefit.

It is thus certain that the pupils of this University, must frequent hospitals for the purposes of Surgery; and that many will frequent them also—and I think all ought to frequent them—for the purposes of Physic; that they must be indebted to other practitioners than the professors,—to others who are unconnected with the University, and possibly are lecturers in other schools,—for a most important part of their education; and that this cannot be celebrated as a medical school,—that it cannot be said to afford a perfect medical education, till it possesses a hospital. Without a hospital, the professors, it must be added, who teach the practical part of the profession, not only are deprived of the means of properly instructing

their pupils, but lose the great advantage of proving to them the truth of their statements, and the propriety of their precepts. One great source of my pleasure in teaching at St. Thomas's Hospital, was the opportunity of shewing the pupils that I practised what I inculcated;—of rendering probable, or even proving to them, that what I advanced was true; and of referring from time to time, for illustrations of my descriptions, to cases which they had witnessed with me in the institution.

For the greater part of these important objects, a small hospital would be sufficient;—a hundred medical, and a hundred surgical beds. This number of well-selected cases, assiduously studied, would answer all ordinary purposes, as well as the 458 beds of St. Thomas's; one half of the cases in which are imperfectly, or altogether unknown, to the pupils; and a hospital of this extent might, I am inclined to believe, be conducted at less expense than is generally imagined. But although such a limited extent might be prudent, and even necessary at first, I trust that the students of this University will one day enjoy the benefits of a large hospital;—that the plan of the charity will be such as to admit of the greatest extension. For an important advantage is inseparable from a large hospital; not that of affording a large number of examples of the same affections, but of giving a probability of the occurrence of the more rare,—nay, indeed, of the rarest diseases, accidents, and operations, during the period every student frequents it. Besides the opportunity of becoming fully acquainted with all the ordinary cases of medicine and surgery, it is indispensable to a full and perfect education, that instances of every disease and accident which he may afterwards have to treat, should be witnessed by the student. Not only does the most elaborate description of a disease, or mechanical derangement, fall short of conveying an adequate idea, but the conception gradually fades away; or, if retained, is frequently not recalled when what was described chances to occur, after a lapse of time; and probably not till another person names the nature of the affection, do we see that it is what we formerly heard of; or if we suspect its nature, we still have our doubts. On the other hand, if diseases or accidents have once been seen,—*oculis subjecta fidelibus*,—when they again present themselves, they are immediately recognized. A striking exemplification of these remarks came under my observation when a student. A poor man, labouring under true scurvy, applied to a surgeon on account of the horrid state of his mouth;—his gums being swollen and spongy, and bleeding; his teeth loose, and his breath offensive. The surgeon, not having seen a case of scurvy, supposed the disease of the gums arose from a bad state of the teeth; and extracted several in succession. He was then sent to another, of high eminence and enormous practice, who pronounced it a case of fungus hæmatodes of the gums; and admitted him into his hospital, intending to resign him to his fate. Being visited, however, by a practitioner who had witnessed scurvy at a naval hospital, the nature of his disease was at once recognized:

some lemon-juice, and fresh meat, and vegetables, were prescribed; and he was well in a week or two. The surgeons, who were not aware of the nature of the complaint, were well-informed men; and the disease was one which all have heard of, and the leading symptoms of which are universally known. But though formerly very prevalent and fatal in London, it is now uncommon; and from the want of having witnessed it, these two gentlemen thus committed a serious error. It is of great importance to the student, that he should have witnessed also all the rarer accidents, and the rarer surgical operations. For all this a large hospital is indispensable; and I trust that we shall one day see a hospital connected with this institution, containing lying-in wards, for the purpose of an obstetrical clinique, and wards for the reception of mental diseases. If we but make a beginning, I feel confident that the public will support us. For to say nothing of the advantages of an hospital to the University, one is absolutely wanted in this situation. The eastern extremity of the metropolis, and the southern side, have the two great Borough hospitals, St. Bartholomew's, and the London. The western extremity has St. George's and the Westminster. But between the east and west, on the northern side, there is merely the small Middlesex Hospital; and in this immediate most populous neighbourhood, none at all; so that not only it, but the adjoining county, has not the advantages possessed by all the other districts within or around the metropolis. Were our University not in existence, the benevolent, on having these circumstances pointed out, would come forward; and if once a fund were established, legacies would be left as to other institutions, which have already more than they can advantageously spend; and when the benevolent see that by their support they would do *more* than further the ends of charity,—that they would, at the same time, aid in supplying their country with a succession of highly-informed practitioners, the double incentive, I am certain, would realize our most sanguine hopes.

While I rejoice in the establishment of an English school of Medicine, in a city, and on a plan, which will render it, if well conducted, equal to any, and far superior to most others, in the civilized world, I rejoice also that this school forms part of a University. Nothing is more to be desired, than that those who go forth into the world to practise the healing art, should be men of excellent education. In most countries of the Continent this is the case. The great body of practitioners there, receive a general education at a University, previously to commencing the study of their profession. They in truth receive what ought to be the education of a physician; and they *are* physicians. In this country those who carry on the great mass of practice,—those who, in addition to their original occupation of apothecary, have risen to the office, though not to the name, of physicians,—are indebted chiefly to their own exertions, for even their professional knowledge and skill. All the lectures, excepting perhaps those on Anatomy and Surgery, have been too scanty and

superficial; and the clinical instruction has been conducted too generally in a most careless manner; so that clinical lectures were actually unknown in London a few years ago, and an extremely small number of those whose chief business in life was to practise medicine ever thought of entering to the medical practice of an hospital, or of even a dispensary. No such systematic method of practical instruction, whether medical or surgical, as is proper,—no intrusting of the students more or less with the charge of patients, is even yet established; and no better education is given by parents to those children intended for medical practitioners, than to those whom they destine for trade; and at the same time when the best part of general education should begin, the youth, with all his capabilities of literary and philosophical attainment, is hurried off to mix draughts and weigh powders, the greater part of the day, for several years. The portion of time thus consumed, and the sum of money thus expended, would enable the youth of our profession to attain every acquirement of a high education. The young men who come to our schools, to prepare themselves for general practitioners are, in the majority of instances, as gentleman-like in their sentiments and manners, as intelligent, as anxious to learn everything that their instructors are disposed to teach them, as those who are sent to Oxford or Cambridge,—as young men of whatever station in society, and in the previous enjoyment of whatever advantages. I trust that ere long the five years' apprenticeship to learn the business of the dispenser, or (as that might be learned in as many months) I should rather say, the five years' apprenticeship to waste their time as shopmen, will be abolished; and instead of the present preposterous regulations, of five long years in the shop before a limb is dissected,—before a lecture on Anatomy, Chemistry, or any other subject is heard, and two years only in systematic public study,—in dissecting and attending so many lectures, and in gaining the experience afforded by the medical and surgical wards of hospital, and in reading (which previously would have been fruitless),—the youth will, through the medium of such establishments as the London University, acquire a good classical education, a knowledge of the three great continental languages,—the French, German, and the Italian,—and no inconsiderable acquaintance with Mathematics, Physics, and Mental Philosophy. By a change of plan, and by practicable facilities, I am confident that all this may be accomplished with no great increase of expense; and the young practitioner be ready for the commencement of his active career, at the age of two or three and twenty; and no one will deny, that a given expenditure of money and of time, ought to be made to produce the greatest possible advantages. These facilities will all be amply furnished by this University; and I hope that the Apothecaries' Company will one day be better pleased that those young gentlemen who go before them, should adduce testimonials of a respectable classical and mathematical education, a capability of reading the German, French, and Italian writers in the originals, and the possession of a share of Physics and Mental Philosophy; than if these

young gentlemen proved they had consumed five years, when the mind thirsts most ardently for knowledge, in drug-mixing, or such poor and desultory instruction as a private practitioner has time to bestow; and which must be as nothing before they begin to learn Anatomy, Physiology, and Chemistry, systematically and practically, at a public school.

An eminent scientific professor at Utrecht, in a pamphlet just published in English by Mr. Faraday, in answer to Mr. Babbage's complaint that science is on the decline among us, says;—"There are countries in Europe where no young man could think of studying Medicine, Mathematics, or Natural Science, with the help of Latin only; and without being prepared, before entering the University, with a sufficient knowledge of German, English, and French. The ignorance of foreign science in England, cannot be attributed to want of zeal, but to a defect in English education,—the ignorance of foreign languages, which it is perhaps the business of the London University to amend." I believe that all the philosophers of the Continent, hailed the foundation of the London University with delight; as an institution which would spread among the general youth of England a far more useful education, and far more liberal principles, than the two old Universities of England have considered it their business to furnish to their clerical and more aristocratical alumni; and as an institution in which every science would be fully taught.

If I am told that this improvement in education, will make the general practitioner equal in knowledge to the physician, I reply, that this will rejoice me beyond measure. I have no desire that the importance of physicians should be maintained, by the depression of the general practitioner. If the physician is to continue as superior to the general practitioner as he formerly was, he must advance in the same proportion; he must not presume to think of preventing the general practitioner from stepping towards him; he must also step forwards himself, to maintain his advantage. The physician, whose means have allowed him to spend more time than the general practitioner in his literary and scientific education, and in the subsequent study of his profession, and has spent it industriously; and who, when in practice, and exempt from the toils of Midwifery, and the other distractions which beset the general practitioner, and having not the whole of the art, but one branch only to cultivate, employs these advantages as his sense of duty must dictate,—will always acquire every reasonable advantage; and general practitioners will gladly avail themselves of his assistance, and will be proud of him as a supporter of the character of the profession. The mass of the middle classes of society, has begun a great movement in the acquisition of knowledge, in the discovery of rights, in the correction of absurdities, and in virtue and liberality of sentiment. The higher orders see the impossibility of arresting this progress; and titles and decorations will no longer command even notice, unless supported by real excellence. Among the higher ranks there are some, who,

so far from viewing this movement of other ranks with dread, step forward to promote it; and the share taken by some of exalted rank and office in the foundation of this University, demonstrates a liberality and generosity which will ever do honour to England, and are worthy of all imitation. So ought physicians to act towards the general practitioner;—to make every effort to improve his general education, and his professional knowledge. In fact, all those who lecture or practise at public institutions, act (whether they will or not) contrary to the narrow views of interest; for they are occupied in imparting knowledge to the rising generation of general practitioners;—occupied in endeavouring to make them as learned as themselves.

In *me* such narrow views would be the height of baseness, and would be the height of ingratitude; for I hesitate not to avow—I rejoice in this public opportunity of declaring it—that to the general practitioners of England, Scotland, and Ireland, I am indebted for success in my profession. When I commenced my professional career, I determined upon seeking for success by working hard; and by conducting myself as well as the infirmity of human nature would allow. I determined, however long I might wait for success, never to fawn upon and run after my superiors, nor to stoop meanly to my inferiors; never to intrigue for an advantage, nor to employ trumpery artifices for making myself known to the public. For many years I toiled; and saw most of my contemporaries, nay, of my juniors (who worked less, but were wiser in their generation) pass by me. I published work after work — edition after edition; and paper after paper was honoured with a place in the Transactions of the first Medical Society in Europe. I was physician to a large metropolitan hospital; and had attended there, and gratuitously out of doors, above twenty thousand patients. But in vain. In 1828 my profession was no more lucrative to me, was as short of my actual expenses, as it had been in 1818. At that time the *Lancet* was pleased now and then to publish a clinical lecture, delivered by me at St. Thomas's; and my practice at once doubled. The following year it published the greater part as I delivered them; and my practice doubled again. Last season the *Lancet* published them all; the *Medical Gazette* followed its example; and my practice has now doubled a third time. This astonished me; the more as my clinical lectures were generally delivered with little or no premeditation; while all that I published myself had cost me great labour, many a headache, and much midnight oil. It was through the general practitioners, in the large majority of instances, and through general practitioners, for the most part, with whom I had not the honour of any acquaintance, that the publication of those lectures accomplished my success. To the body of general practitioners, therefore, I owe a debt of gratitude. They have called me forth spontaneously from no interested motive; and I cannot exert myself too much in the education of their successors.

Conscious though I am that my lectures will not be without

defects, I still can promise diligence, and the omission of no anxious care. The pupils will never find me maintaining a professorial distance; but always bearing myself as their friend, and only as a student of longer standing than themselves. I thus have always conducted myself towards the students of St. Thomas's, and never met with rudeness, or even with neglect; but, on the contrary, have ever experienced the most affectionate respect. In the ancient statutes of Oxford it was enjoined, that "after lecture the professors should tarry for some time in the schools; and, if any scholar or auditor may wish to argue against what may have been delivered from the chair, or may otherwise have any dubiety to resolve, they should listen to him kindly, and satisfy his difficulties and doubts." In the spirit of this good rule I shall always act; and, in season and out of season, not only *during* lecture but *after* lecture, and in my own house whenever it may be desired, the student will ever find me ready to impart any information, and to give him any counsel in my power.

GENERAL OBSERVATIONS.

It appears to be a law of the universe, that every thing shall undergo incessant change. Whether the universe be eternal or not; whether we believe it has existed (according to the opinions of some ancient philosophers) from eternity, and is to exist to eternity; or whether we are so to understand Scripture, as that not only the arrangement of all things, but all things themselves, had a beginning, and must have an end; yet while the universe is in existence, it appears to be the law of the Creator that every thing in it shall undergo incessant change.

Both the material and the animate world are in this predicament. The most minute aggregate of matter, and the largest material bodies, appear only destined for certain periods of continuation in their existing state. We see with respect to our own earth, that countries are continually lessened and destroyed by the encroachments of the sea and by eruptions; and on the other hand, from similar circumstances, other countries are produced; so that it is probable that the appearance of the earth at present, is totally different from what it once was, and that after a period it will be totally different from what it now is. Even with respect to other worlds, there is every reason for astronomers to believe, that many have been destroyed; and that some worlds which are now seen, are but fragments of others which have been broken to pieces.

With respect to the animated part of the creation, every vegetable,—every animal, has but a limited period destined for its existence. This period is exceedingly various; for some animals are destined to live but a few hours, while others again appear to live for centuries.

But besides this definite period, every animated being is liable to be cut off long before its natural period has arrived. Animals and vegetables are all exposed to violence of every description;—not

only to *mechanical* violence, but to the destructive operation of ten thousand causes; and to disturbance from the cessation of the circumstances which are necessary to their existence. One animal is destined to devour another while in its prime; nay, to destroy the element of what would be the young—to destroy the eggs, for example, of another; and myriads of insects are continually destroyed in storms. Constantly, therefore, the limit which Providence appears to have placed to every thing is curtailed—every animal and vegetable is subject to be cut short long before that limit is reached; so that there appears to be a perpetual struggling throughout nature; —the Creator having, on the one hand, invested every animated being (whether vegetable or animal) with a power to exist for a certain time, and to resist injurious agencies; and having provided, on the other hand, injurious agencies without number, to injure and to cut it off before its time.

It has been said by some philosophers, that to look at man one would suppose that he was destined to live to all eternity;—that, at first sight, such a machine as the human body, unless destroyed by external violence, would appear capable of lasting for ever; and that it is by experience alone we are taught the contrary. *Primo statim aspectu talis machina, nisi fortè vi externâ corrupta, in omne ævum durabilis videtur; et quidem solâ experientiâ contrarium docemur.*

However, there is nothing in the appearance of the human machine which would lead us to suppose that it could last for ever. Whatever we know of nature can only be learned from experience; and it would be as correct to say that because it is summer we should believe it will be summer for ever, or because it is day we should believe it will be day for ever, unless we have contrary experience, as it would be to say, that the human machine in itself appears capable of lasting for ever. We can learn nothing from taking a partial view of things; for it is impossible to form a judgment of nature, except by taking a continuous and enlarged view. It would also be contrary to all analogy, to suppose that the human machine is capable of lasting to eternity.

With respect to the injurious circumstances which are positive, and to which animals are exposed, and by which they may be cut off before their full period has arrived, they are those, in the first place, of mechanical violence; and likewise those of a specific nature. Many animals and many vegetables contain within them materials, which are destructive to the life of others.

They are liable to be destroyed, also, from a want of suitable external circumstances; for a series of actions is incessantly going on in every animated machine, and those actions are maintained by external circumstances;—such as by a certain degree of temperature, by a certain surrounding atmosphere, and by a certain supply of matter to be taken into the mouth or stomach, or something equivalent. The deprivation of any of these may put a stop to existence, or may impair it; and the excess, on the other hand, of some of these, will have the same effect. The excess of food may destroy or

injure life; and the excess of heat may cause serious injury, or absolutely consume the body. Besides this, the depraved quality of those external matters which are necessary to the continuance of life, will have an injurious effect. The unwholesomeness of bad food is a circumstance particularly illustrative of this.

One of the most common causes—indeed, I may say, the most common cause of diseases, is a deviation with respect to external temperature. A certain degree of heat is required for the support of life; and a deviation in that particular is the most common cause of the diseases that we see here. An excessive degree of heat produces one set of effects; an excessive degree of cold produces another; and an alternation of the two, from the body being suddenly exposed first to the one and then to the other (more especially if this exposure be partial) is attended by the most serious effects. The greater number of diseases are inflammatory; and the most common cause of inflammation is sudden alternations, or other unfavourable circumstances, in regard to temperature.

Bad air is also a common cause of disease; but this does not arise from the want of oxygen in particular, as has been imagined; but from the presence of certain substances of deleterious quality. I believe it is found that the quantity of oxygen in the air, is the same in almost every country and in every situation; and it is the presence of other things, in addition to the oxygen, which produces the injurious effect. We see the effect of the bad quality of the air in unhealthy situations, where persons are sallow and bloated, and carry about with them marks of disease visible enough to others who come from a healthy spot, although these are not allowed by the parties themselves to exist; simply for this reason,—that they are so accustomed to what they witness, that they conceive it to be their nature.

The ill effects of unwholesome food are seen every day. The body is rendered feeble; and when this takes place, whether from bad air or bad food, it becomes an easy prey to any other cause of disease which may present itself. Want of the rest necessary for the refreshment of the body, has also the effect of producing disease. Excessive action, too, either of the mind or any part of the body, has likewise the same tendency.

Thus disease is continually produced from mechanical violence, from the presence of injurious agents, and from errors in regard to those agents which are absolutely necessary to the support of life,—whether it be the error of excess, deprivation of their proper quantity, or depreciation of their quality.

This, however, is not all. When a disease has been induced, it frequently happens that a tendency to that disease is transmitted to the offspring of the sufferer; so that it requires no exposure of such offspring to the particular cause of the disease, in order to become its victim; but at a certain period of life, unless placed in very happy circumstances—and perhaps in spite of the happiest circumstances possible—the disease under which the parent laboured appears in

the child, or in a still later offspring, and possibly cannot be controlled. Again, independently of the external circumstances to which the offspring is exposed, and inherent disposition to disease, original malformation of certain parts of the body so disorders its functions, that sooner or later disease appears, which may end in death.

Now when disease takes place, the functions of the body go wrong. A series of actions is continually taking place in the body; and some of these, when what is called *disease* occurs, become deranged. The circulation of the blood is altered; more is accumulated in some parts than there should be, and less in others. The temperature of the body is altered; it is too hot either partially or generally, or it is too cold. The feelings of the body are altered; they become too acute or too dull, or they become otherwise wrong. The strength of the body likewise is changed; in some few instances it is increased, but in the great majority it is impaired. What is done naturally in the body before this change takes place, is now done either too little, or too much, or in a depraved manner. The products of the body are likewise altered. The sweat is not natural in its quality, any more than in its quantity; the urine becomes altered in its quality; and the secretions poured forth from the intestines likewise in theirs; and I have no doubt that the excretion from the bronchial tubes, is likewise changed in its constituent proportion. At last, even the structure of the body will become affected. Not merely are the *actions* of the body altered, and the *products* excreted from it; but the very *substance* of the body itself will become changed.

With respect, however, to all the changes I have just enumerated, they must evidently be in a certain intensity;—a certain degree of them must exist, for us to say that disease is present. A change, although, strictly speaking, you might say it was a disease, may be so inconsiderable, that one would be laughed at for calling it by that name. A slight spot upon the surface,—a single point not larger than a flea-bite, no one would think of calling a disease: and yet, if there were a large number of these, though the only difference consisted in amount (the nature and degree of each being exactly the same,) we should not hesitate to say that disease was present. Therefore, when a deviation with respect to function or structure takes place, there must be a certain extent of it, or a certain intensity of it (one or the other) to justify us in saying it is really a disease. Logically and strictly speaking, disease is said to be "an aberration of function or structure of one or more organs from a sound state." You will find this mentioned in some books, as the definition of a disease. But this is hardly sufficient; because, with respect to *structure* a part may be sound, and even with respect to *function*, and yet be in a state of disease. A part may grow to a much greater size than natural,—there may be diseased bulk of the organ, although the structure is healthy. This is a rare occurrence; but sometimes it does take place. Generally, where there is increased bulk there is diseased structure; but it is possible for a part to be enormously

large, without being altered in structure; and yet the person may be said to be labouring under disease. A person with an enormous liver, or brain, though no unhealthy change could be discovered in its texture, would nevertheless be pronounced to be in a state of disease.

So with respect to the fluids; they also suffer very great changes, and yet there may be no fault of function. In the disease called *anæmia*, where the blood is deficient in quantity, the disease may really be quite independent of any fault of the body itself. A mere want of nourishment may cause the blood to be of a diseased quality; —that is to say, not to contain its natural elements, but to be very watery,—to be thin and pale; the whole body becoming white or tallowy in appearance; and yet no function can be said to be diseased, at least excepting through this. The body is ready to do all that is required of it, if proper food be given. Therefore this definition of disease, you find, is more or less exceptionable. Besides, in a large number of diseases, the quality of the fluids is altered; and it is essential to a correct definition, that this should be taken into account.

With respect to the *extent* of affection which is necessary to exist in order to constitute a disease, there must be a great difference in various individuals; for the health of different persons is exceedingly various. What is health to one man, would be disease in another; just as the degree of strength which is natural to a delicate person, would be considered downright weakness in another. To obviate any difficulty of this kind, you will sometimes find added to the definition of disease which I have already given,—"rendering assistance necessary." The definition given in Dr. Gregory's Conspectus is: —A disease is present, when the customary actions of the body are either altogether impeded, or performed with difficulty and pain. "*Morbus adest, quum corpus tantum a statu sano deflexerit, ut solitæ actiones vel prorsus impediantur, vel ægre aut cum dolore perficiantur.*"

Disease, therefore, may generally perhaps be defined to be,—"an aberration of function, or structure, or size, of one or more organs; or of the quality of the fluids, from the sound state;—rendering assistance necessary."

This, however, you will observe, is only a definition of disease in general; and I shall have to make some remarks upon the definition of each particular disease hereafter. You will thus see, that diseases are neither more nor less than alterations in the physiology or anatomy of the body;—that they are Morbid Physiology, and Morbid Anatomy. This morbid state of physiology, and this morbid state of anatomy, are together called *Pathology*. The doctrine of diseases, whether as it regards function or composition, is called *pathology*. There is an inclination, in the present day, to limit the word "*pathology*" to Morbid Anatomy. That, however, I think, is quite unjustifiable; for Pathology is the doctrine of disease, whether it relates to function, or structure, or both. Pathology, therefore, is an unhealthy state (if I may so speak) of Physiology and of Ana-

tomy;—the composition of the fluids, as well as function, being comprehended under the term "*physiology;*"—size, as well as structure, being comprehended under the term "*anatomy.*"

Now diseases are often divided into those which are *functional*, and those which are *structural;* but it is very common for the one to terminate in the other;—for diseases which are at first purely functional, to become at last structural; or, at any rate, many organic diseases do not at first exhibit themselves as such, but are ushered in by a change of function. It is possible that a minute change of structure may exist, long before it is discovered; and that minute change is enough to explain the alteration of function; but many diseases exist long, to all appearance, as mere functional disturbance, before they become structural. Many diseases remain functional,—at least they go through their course as a disturbance of function, never affecting the structure; but structural diseases almost always disturb function. It is evident that if the structure of an organ which is to perform a certain duty be much altered, that duty cannot be well discharged.

Structural diseases are sometimes called *organic.* I believe that the words "*structural*" and "*organic*" are used synonymously, to express those diseases which consist in a change of composition and arrangement of the organ itself, and not a mere alteration in the mode in which it does its duty. Perhaps the word "*organic*" is preferable to the word "*structural;*" and for this reason,—that some diseases of this description do not appear to consist in any alteration of structure, but merely in a diminution or an excess of bulk. Now in those cases which, though they are rare, nevertheless do sometimes occur, in which an organ wastes, or becomes larger than natural, and yet appears otherwise healthy, the affection cannot exactly be called "*structural;*"—the word "*organic*" better applies to them; and therefore, altogether, the term "*organic*" may be preferred to "*structural.*"

There has been an attempt by some to call the one set of complaints, supposed to be merely functional,—*disorders;* and the others, which are structural or organic,—*diseases.* For instance, to call dyspepsia, or diabetes, a "disorder;" and ulceration or cancer of the stomach, or ulceration of the kidneys, a "disease." You will not, however, find this generally adopted. It might be very well if all persons agreed to adopt the terms in this sense. But that is not the case: indeed, so far from it, that, in most books, the expression "organic or structural *disease*" occurs; which would not be necessary if every one adopted the word "*disease,*" to signify in itself a structural affection. Nay, so extensively is the word "*disease*" employed by some persons, that even accidents, as dislocations or fractures, are called disease. You will find, in Cullen's Nosology, that dislocation and fracture are arranged under the class of local *diseases.* The word disease, then, is used by some nosologists very extensively; they employ it to signify accidents, mechanical affections, dislocations, hernia, and every thing of that description; and it is used by

almost all writers to signify both functional and structural affections. I shall not, therefore, attempt to use the word "*disease*" to signify organic affections exclusively; but all depraved conditions, whether functional or organic.

Disease may be considered accordingly as it is *local* or *general*. Some diseases affect only one part, and others are supposed to affect the whole system. Fever, for example, is supposed by many to be a general affection, and it has been instanced as such; others, however, now deny that there is any such thing as a general disease, and assert that fever is only an inflammation of one part or other of the body. You will find that Broussais maintains the latter doctrine. However, I can entertain no doubt that there are such things as general diseases; and it appears to me that scurvy is of this description, for every fluid of the body seems vitiated;—at least the blood throughout the whole body is so, and all the solids appear to be in a similar state. There is no one part of the body that can be fixed upon as the seat of the malady; and therefore I think scurvy a fair illustration of general disease. So with respect to ague. I cannot discover any reason for ascribing the disease to any one part of the frame; and I therefore think that it also is an instance of a general affection.

Diseases are also different from each other accordingly as they are *acute* or *chronic*. Some diseases come on suddenly, last usually but for a short time, terminate either in health or death,—*cita mors venit aut victoria læta*,—and are called *acute*. Other diseases last for a long time, perhaps coming on slowly; but whether they come on slowly or suddenly, if they last for a long time, they are called *chronic*. Acute diseases, however, will sometimes, instead of terminating in health or death, become chronic;—that is, become less violent in their degree, and go on for a length of time. Diseases, therefore, are to be considered acute or chronic according to their duration.

You will find that diseases are also considered, by some, accordingly as they are *active* or *passive*;—that is to say, accordingly as they are attended with a degree of violence or excitement of the system, or no excitement at all. You will find some persons (indeed a large number) use the terms "*active*" and "*passive*," and "*acute*" and "*chronic*," synonymously; but this is an error against which I am particularly anxious to guard you. It does not follow because a disease is acute—that is to say, exists for a short time, and then terminates—that it is necessarily attended by violent symptoms; nor does it follow, because it lasts for a length of time, that these symptoms should not be active. This is every day illustrated in the case of rheumatism. It is daily spoken of as acute or chronic, and active or passive; the term acute being used indifferently with active, and chronic with passive; so that, in the chronic form of the affection, a person would not think at first of applying such remedies as in an acute attack; taking it for granted that, as the disease is chronic, there is no violence; but that a slowness of mischief is going on, and that the

remedies for the active acute state are improper. But you see cases of rheumatism every day, which have lasted for six or twelve months, or even longer, attended with all the symptoms of an acute disease;—that is, attended, if not by quickness of pulse, by heat of the parts; and if you take away blood, you find it buffed. It would, therefore, be a serious error, if you were to consider "*active*" and "*passive*," as synonymous terms with "*acute*" and "*chronic;*" because in acute diseases, the word "*acute*" refers simply to their short duration; and in chronic diseases, the word "*chronic*" simply to their long duration; whereas the word "*active*" refers to the violent disturbance going on, in the system or part, and the word "*passive*" to slow changes,—changes not of a violent description. A *chronic* disease may be *active;* and an *acute* affection may be *passive.* A person with an acute affection may lose all his powers, and the whole functions of the body may go on in the most languid way; and therefore acute and chronic are one kind of thing, active and passive are another. An *acute* affection cannot be *chronic*, but it may be *passive;* and a *chronic* affection cannot be *acute*, but it may be *active.*

You will find diseases differ also according to their uniformity of duration. Some diseases continue with uniform tenour during their whole course,—without any very great deviation from the beginning till the end; and these are called *continued.* Other diseases, again, undergo a very great remission at regular periods, or at least pretty regular periods; and then they are called *remittent;*—the symptoms not going off entirely till the disease ceases altogether, but undergoing such a relaxation of severity at such periods, as to acquire a character from this circumstance. Other diseases, again, will cease entirely from time to time, and generally too at stated times, and recur again at certain intervals, as long as the person is affected with them; these are called *intermittent.* This is particularly seen in the case of fever. Fever may hold a pretty uniform course,—never ceasing at all, or particularly diminishing, during the twenty-four hours till its close; and we then call it "continued" fever. It may last for a day, a week, or several weeks. Others are characterized by a sudden diminution in the degree of heat, violence of pulse, thirst, and all the other symptoms, at a certain period in the twenty-four hours, and perhaps at longer intervals, but not ceasing entirely: such is the character of "remittent" fever. Others, again, cease entirely. The patient will be attacked at a certain hour; be ill a certain number of hours; and then be perfectly well, with the exception perhaps of languor; the fever then receives the name of "intermittent."

Diseases differ, therefore, accordingly as they affect function or structure; accordingly as they are local or general; accordingly as they are acute or chronic; accordingly as they are active or passive; and accordingly as they are continued, remittent, or intermittent.

Diseases likewise differ exceedingly in their true inherent *nature*, independently of any other circumstances. They differ also as to

their *causes*. Some are produced merely by an aberration as to some of the circumstances which are necessary to the support of life, such as the excess of temperature or food; or a deprivation of food or air; or a *diminution* of food or air. Others, again, are produced by specific causes,—by the agency of particular substances, the nature of which cannot be comprehended; such, for example, is ague, which is produced only by a certain exhalation; and such is small-pox; and such are all those diseases which acknowledge a peculiar specific poison for their cause. Diseases differ, likewise, according to the *organ* which they affect. There are some diseases which can affect almost every organ in the body. Inflammation is one which affects every part of the frame which has vessels; but there are certain diseases that can only affect particular organs. Diabetes, for example, can affect, so far as we can judge of it, only the kidney; and the tendency to produce gall-stones, can evidently affect no other part than the biliary system. Therefore diseases differ, in addition to all the circumstances previously mentioned, accordingly as they may affect any part of the body at large, or are necessarily confined in their operation to particular organs.

With respect to the *causes* of disease, you will find them generally divided by authors into two,—the *remote* and the *proximate*. The remote causes, again, are divided by systematic writers into two more, *predisposing* and *exciting*. The word "*cause*," however, is in these cases used in a totally different sense. When we speak of "*remote* causes," a very different idea presents itself to you than when we speak of "*proximate* causes;"—in fact, the cause of the disease, properly speaking, can only be remote. For example, the remote cause of fever may be bad food, and the depressing passions; and the exciting cause may be, according to some, a specific contagion. Now the remote causes of the first description are called *predisposing;* they render the body liable to become the prey of something, which has a tendency to excite the disease. The exciting cause of the disease might have had no effect, unless the body had been predisposed; and the predisposition might not have had the effect, unless the exciting cause had occurred. A circumstance, therefore, which inclines the body to become the subject of disease, is called a predisposing cause—*causa prædisponens;* that which actually excites the disease, exciting—*causa excitans;* and both together are called *causæ remotæ*. They are called remote, I presume, because they are a little distance from the disease itself; and because the proximate cause is, to all intents and purposes, close to and all but the actual disease; and, in one sense at least, it is the disease itself.

The application of this term gives rise to a great deal of confusion to the student. You would imagine that disease could be nothing more than disease; and to call the disease the proximate cause, would be thought absurd; but the reason of this I will explain. In defining any particular disease, we are obliged to take into our definition only what we observe; just as the naturalist defines any

flower, or any mineralogical specimen, by merely taking what is the object of sense, and describing it with all the marks together; and thus we have what is called the definition of a disease. For example, in jaundice you take the yellowness of the skin, the yellowness of the eyes, the yellowness of the nails, the whiteness of the fæces, and the high colour of the urine, together; and you say that the patient certainly has jaundice. The jaundice is not the disease, strictly speaking; but the collection of symptoms under which the patient labours, is called jaundice. The word "*disease*" is thus applied by nosologists, not to the single *cause* of all these symptoms, but to the *collection* of symptoms. Take epilepsy: a person falls down foaming at the mouth; struggling in every limb; perfectly unconscious; and afterwards, when he ceases to foam and struggle, he lies senseless; such a person is said to labour under epilepsy. These particular symptoms, blended together, occurring in succession, are called epilepsy. Now in Cullen's, and other methodical nosologies, you will find the disease defined according to mere symptoms;—all opinion, all cause, is excluded. You take merely the symptoms, and you call them the disease; and it is perfectly right that it should be so. But these symptoms must have a cause; there must be a cause for this disturbance in epilepsy;—there must be a cause for the bile going into the blood in jaundice, appearing in the urine, and not being able to find its way to the fæces. The cause of the epilepsy, or of the jaundice, is the circumstance that produces all these effects; and that is considered to be the "proximate" cause. If the epilepsy arose from a piece of bone depressed upon the brain, you would say the proximate cause of the epilepsy was the spiculum of bone. If the bile were obstructed because a calculus was impacted in the hepatic duct, you would say the impaction of the calculus was the proximate cause of the jaundice. You therefore observe that the proximate cause is, in fact, the disease itself;—the actual disease from which the symptoms arise. The *remote* causes are those that predispose to the disease, or actually excite it; the *proximate* cause is the circumstance to which the *predisposing* and *exciting* causes have given rise; and this circumstance, when present, produces all the external symptoms,—the visible changes.

But the word "*disease*," when you come to any specific affection, is (in a nosological sense) applied merely to a set of symptoms;—to that which we can comprehend,—which is discernible; and as nosologists, we should not apply the word "*disease*" to the cause of all these symptoms; but should call it the *proximate cause*. You will find, however, when speaking as *pathologists*, and not as *nosologists*, that persons inquire, what is the actual disease in this epilepsy? What is the actual disease in this jaundice? Is it an enlarged pancreas pressing upon the ducts? Is it a calculus sticking there? Is the disease a contraction of the sides of the ducts, or what is it? But that is a different sense of the word "*disease;*" and it is necessary that you should know that the term is employed by methodical nosologists, and must be so by me, to signify a collection

of symptoms; and not the true *cause*, which is at the bottom of those symptoms; for though we might be inclined to say that this was the real disease, yet it is not so considered, but has received the appellation—"*proximate cause.*"

I trust, therefore, from the explanation now given, you will hereafter escape any confusion which might otherwise arise; because, for want of understanding this, you will hear persons quibble about what is a disease, and what is not. It is necessary to know that a set of symptoms, following in a certain order, or united in a certain collection, is called a disease; and the *immediate* cause of all these symptoms—which some say is the real disease—is called by the best writers the proximate cause.

I must now enter a little more minutely into the explanation of certain expressions, which will be used throughout the course; because, unless they are understood, it will be impossible for me to speak intelligibly. The whole doctrine of disease together is called *General Pathology.* Pathology is the science of disease—the *ægroti hominis scientia;* while Physiology is the science of man in health. I of course mean *human* physiology. General Pathology is commonly said to embrace four particulars:—First, general *nosology;* that is to say, an account of diseases in general, and of their chief differences. Secondly, an account of the *symptoms* of disease, which is called *semeiology*, or *symptomatology.* Thirdly, the *causes* of disease, which is called *ætiology.* And fourthly, the *treatment* of disease, which is called *therapeia.*

With respect, however, to pathology, there is not only a *general* but a *special* pathology, which respects particular diseases; and if the epithet "*methodical*" is attached to *nosology*, an arrangement of diseases is meant;—a classification of the various affections to which we are liable. I shall first speak of what is called *general* nosology, or the consideration of diseases in general. These may be *local* or *general:* when they are local, however, they seldom continue so without producing more or less general effects. Diseases vary in their symptoms, and in their course, according to the texture which they affect. You know that the body consists of a certain number of textures; that the various parts of the frame may be resolved into a certain number of particular tissues, as they are called. Now some diseases affect certain textures; and others affect other textures; and the symptoms of diseases, and their course, are influenced very much by the texture which is thus affected. To take inflammation, for example, we shall find that the symptoms are very different when it affects a *serous* membrane, from what they are when it affects a *mucous* membrane. Again, the symptoms are very different when it affects the skin, or when it affects a bone. The symptoms of disease, too, and the course of diseases, vary exceedingly, according to the organ. Diseases may not only attack a particular organ, but they may attack a particular texture in a particular organ, or they may attack all the textures of an organ. Now when they do attack any particular organ, the importance of

that organ to the economy, the function which it performs in health, the whole set of relations of that organ, greatly influence the symptoms. For example, inflammation which may be of no consequence in the finger, may (though only to the same extent) be fatal when seated in the stomach; a little ulceration, of not the slightest importance on the hand, may produce death if it occur in the stomach; an affection in the brain, or in the heart, may be productive of very different results—a very different degree of danger, from what it would if seated in many other parts.

Diseases likewise vary exceedingly, accordingly as they are attended by *excessive* or by *diminished* action. Some diseases are characterised by an inordinate, violent action of the part;—the natural state of the part seems augmented. Whatever is done in health, is done ten times more in the disease,—at least for a time, till the strength is exhausted, or the state gradually subsides into health. Other diseases are characterised from the beginning, or nearly so, by a great diminution of action. The natural functions of the part decline exceedingly; so that depression is the character of the disease. If the part affected be one characterised by feeling (such as the surface of the body) the feeling may become very intense. If it be one whose function is motion, the latter may become very intense, and you may have convulsions as the consequence. On the other hand, you may have a *diminution* of feeling,—perfect torpor,—insensibility; and such an absence of all power of motion, that the part is useless to the individual. Again, if the part be one which secretes, the secretion may be in *excess;* and if it cannot escape we have dropsy. The secretion, on the other hand, may be exceedingly *diminished;* so that, in the case of the kidneys, no urine can be formed; and in the case of the skin, the surface shall be perfectly dry.

Some diseases, among structural affections, are attended by a great dilatation of the part; the part becoming much dilated, beyond its natural extent. On the other hand, in some diseases, the parts become contracted and diminished. In some diseases the parts become exceedingly hardened; so that from being naturally soft, they become as firm as cartilage; and are sometimes converted into absolute bone. Again, very firm parts will occasionally become perfectly soft; and bone will become as pliable as muscle. I myself have seen the liver become softened down to a pulp, to all appearance, in the course of three days.

Again, diseased parts will become exceedingly full,—distended with fluid; and this may be *general* or *local*. It may be local congestion, or universal plethora of the body. In other instances, the parts become devoid of fluid, and shrink; and this is observed also generally or locally. Alterations of texture likewise take place, and alterations in the quality of the fluids. The texture,—to say nothing of induration, softening, hypertrophy, or atrophy,—the texture of the parts sometimes becomes perfectly different from what it is observed to be in the state of health. So with respect to the fluids,

they will frequently be formed of a character totally dissimilar from what they should be. The urine is sometimes any thing but genuine urine; and the bile is sometimes so pale that you can scarcely recognise it as bile; and so with respect to the blood itself; it is sometimes very little more than a reddish watery fluid.

These are important and essential differences in disease. There are, however, many other varieties, which are considered more or less accidental;—that is to say, which do not affect the nature and course of the disease. For example, some diseases are hereditary, and this will not at all influence the nature of their course or duration; but some diseases may be hereditary in the particular individual; while other diseases are not hereditary,—not transmitted from parent or ancestor to offspring or posterity, but still are born in the individual. They seem to be implanted in him at his first formation; and then they are called only *connate* or *congenital.* A disease which is connate, or congenital, may be hereditary; but it is not necessarily so. All diseases which are neither hereditary, nor connate or congenital, are said to be *acquired.*

Then diseases—to speak still of accidental varieties—are sometimes *primary*, and somtimes *secondary.* Sometimes the disease which occurs is the first; but sometimes, after one disease has taken place, it is joined by another;—that is to say, it exists with another, or gives such a predisposition that another is produced; but it is of no consequence to the nature of a disease, whether it is primary or secondary.

Again, diseases are sometimes said to be *sporadic*, sometimes *endemic*, sometimes *epidemic.* A disease is said to be *sporadic*, when it occurs from an accidental circumstance occurring to any particular individual;—when it is a solitary accidental case. Hence, when a person, by exposure to cold, suffers inflammation of the lungs or intestines, he is said to labour under a sporadic disease. These are insulated cases, having no connexion with each other, not having any general prevailing cause. But if diseases occur from some general and temporary cause affecting a whole population, then they are said to be *epidemic.* Sporadic and epidemic, therefore, stand contrasted with each other; diseases of the former class being those which occur occasionally and accidentally, from some peculiar circumstance happening to the individual; while epidemic diseases are those which affect a large mass of persons, from some general prevailing cause. Again, diseases are sometimes said to be *endemic;*—that is to say, when they do not arise from any general influence at a particular time, pervading a population, but when they spring from certain causes fixed and inherent to a certain place;—when certain places in which people reside, send forth causes of disease, which all persons who come to that spot are liable to, but from which persons do not suffer unless they go there. This is the distinction between endemic and epidemic diseases;—the former being confined to the inhabitants of a particular spot; and the latter being those which arise from a general cause, taking place only from time to

time, and pervading, not a particular spot, but a considerable population.

Another difference in diseases, not at all affecting their nature, their course, or their treatment, is, that they may arise from a common cause, or from a specific contagion. Some diseases are contagious and some are not, but the symptoms do not vary in their essential nature; so that we are continually very much in doubt, as to whether a certain disease is contagious or not. There is nothing in the disease itself, to make us say that it must necessarily be contagious; and the greatest disputes are carried on, as to whether a particular affection is or is not contagious.

Diseases have likewise been distinguished according to the time of year at which they occur; so that we have vernal, summer, autumnal, and winter affections;—*vernales*, *æstivi*, *autumnales*, *hyemales*. Other accidental differences of disease arise from their seat, —whether they are internal or external;—and then, again, as to whether they are fixed, or whether they wander. If they cease in one particular part, and appear in another, they are said to be *metastatic*, or *retrograde*, or *retrocedent*. If disease suddenly cease in one part, and another become affected, a metastasis, or change of place, is said to have occurred.

Diseases differ according to their severity. Some are exceedingly severe, others are light;—some are said to be mild, and others are said to be malignant. Those which are said to be of a malignant character, however mild they may be in appearance, are sure to baffle all the resources of our art, unless we can eradicate the affected part by a surgical operation; which sometimes is, but sometimes is not, possible. However, the word "*malignant*" is sometimes employed simply to denote a certain degree of severity; it is a term of rather indefinite meaning. Small-pox is said sometimes to be mild, and sometimes malignant;—and, again, a sore which is of a cancerous nature, however trifling the pain it may be attended with at first, but which is sure to go on to ulceration, violent pain, and, at last, destruction of the part, is also said to be malignant.

Diseases vary likewise as to their duration. If they be exceedingly short, so as to terminate within four days, they are called by Latin authors *acutissimi;* but if they terminate within seven days, then they are called *peracuti*. We have no English words to signify the difference between these two durations. If they terminate within fourteen days, they are called *acute;* if they run on to twenty days, then you will find authors calling them *sub-acute;* and some are so nice in their terms, that if they last forty days they call them *acuti decidui;* and all that run on above that period are called *chronic*. It is sufficient, perhaps, to remember, that an acute disease is considered one which terminates within fourteen days;—a sub-acute one which terminates within twenty; for though some authors make a still more nice distinction, and call a disease subacute which terminates within twenty days, and apply the term *decidui acuti* to those which extend to forty; yet if the disease extend

to or above twenty days, we may consider it chronic;—at least I fancy a *patient* would think we were justified in so denominating it.

Diseases, again, are considered as to whether they are continued, or intermittent, or remittent. *Continued* diseases are generally understood to embrace two varieties as to course: namely, diseases which pursue one uniform course to the end, and are called *continuent;* and those which relax from time to time, and are called *remittent.* You find many persons speak of continued disease, as distinct from remittent; and it is so common that we are justified in using the distinction; but some make a nicer distinction, and use the word "*continued*" to include *continuent* (that is to say, one which preserves the same tenor to the end,) and *remittent* (one which, although it never ceases, yet relaxes from time to time.) Diseases, however, are sometimes *intermittent;*—they absolutely cease altogether at intervals, and then recur again. If intermittent diseases recur and disappear at regular intervals, then they are called *periodical.* A periodical disease is necessarily intermittent; but an intermittent disease is not necessarily periodical. Intermittent embraces the circumstances of simple intermission, no matter when or how; but it embraces also regular intermission,—periodical disease. The presence of a disease which is intermittent, is called the *paroxysm,* or *exacerbation,*—these being considered synonymous terms; and the interval which occurs between them, is called the *intermission;* or, in case of febrile disease, the period of *apyrexia,*—the period of the absence of pyrexia.

I fear being troublesome in mentioning the meaning of so many terms; but it is absolutely necessary that they should be understood before we proceed to speak of particular diseases. I will now make a few more minute observations, in regard to what I said of the *causes* of disease.

The remote causes, I mentioned, have been divided into two;—the *predisposing* and *exciting;* those which are exciting, you will find are by some authors called *occasional* or *procatartic.* Generally, in England, we say "predisposing," or "exciting;" but in foreign books you will find a variety of other names employed.

In regard to the *predisposing* causes of disease, they depend upon a very great number of circumstances. Each particular age, for example, is predisposed to particular affections. The child is predisposed to one kind of disease, the youth to another, the adult to another, and the old man to a very different set. Climate, also, causes a great difference in the disposition to disease; the season of the year, likewise, has a great effect; the habit of the individual, as to temperance and sobriety, and as to a natural or unnatural and artificial course of life, has a peculiar influence. All these circumstances cause a predisposition to different affections. In regard to some diseases, there is not so much a *predisposition* required, as a *want* of *indisposition.* For example, almost every one will take the small-pox, the measles, and the hooping-cough; so that we can hardly say that there is a predisposition to these diseases; the cases

in which they do not occur are rare exceptions; and we are more justified in saying, when these diseases will not occur in spite of the presence of contagion, that the person is *indisposed* to them, than that those who catch them are *predisposed* to them ;—that is to say, by nature we are *all* more or less liable to them; and it would be almost an abuse of terms to say that we were predisposed to them. All that appears to be requisite is, that there should be no indisposition to them.

With respect to the *exciting* causes of disease, they have been generally classed in three orders;—those which excite or stimulate, those which depress or debilitate, and those which exert a physical or physico-chemical action. Heat, and excess in wine, are *stimulating* causes of disease; the depressing passions, and an excessive loss of blood, may be instanced as *debilitating* causes of disease ; and these debilitating causes you will find, when you read some Italian authors, spoken of as *contra-stimulating* causes. Many causes, however, cannot be said either to depress or stimulate solely ; they exert a peculiar action, which is not to be thus explained. It is something we do not understand. For example, malaria, which produces ague, is a certain agent perfectly unknown to us, except so far as regards the situation in which it is produced. Malaria produces a set of symptoms of so peculiar a nature, that we cannot say it is a mere depressive or contra-stimulating agent;—that is to say, though the first symptoms of ague produced by it are those of extreme debility, yet if we weaken the body to the same extent in various ways (as by bleeding and other means) we do not produce that train of symptoms known to us as intermittent fever. We therefore have stimulating, depressing, and physical or chemical causes;—which are sometimes called *stimulantes*, *contra-stimulantes*, and *irritantes*. We must not, in medicine, be very nice about the etymology of our words;—that is to say, we must employ words of a certain meaning, so as to be clearly understood; but we shall find words signifying something very different from what their etymology would lead us to suppose. Nor is this remark confined to Medicine; it applies equally to Anatomy; and our only object should be to become understood among ourselves;—to know what ideas are meant to be conveyed, when certain expressions are used.*

An *exciting* cause may become a *predisposing ;* and a *predisposing*, an *exciting*. For instance, malaria excites ague. But a person who has been exposed to malaria, may not have ague till he accidentally gets wet through; and then this *excites* the disease, to which the malaria had only *predisposed* him. Again, if a predisposition continue to increase, disease will happen without any exciting cause. Plethora of the head may increase till a fit of apoplexy occurs,—without stooping, overloading the stomach, or any common exciting cause.

* This is a very *good* object, but it ought not to be the *only* object aimed at. The " expressions used" should, as nearly as possible, correspond with the " ideas meant to be conveyed."

Among the most common causes of disease, are aberrations with regard to six particular circumstances, which have been very strangely called *non-naturals*. The air we breathe, the food and drink which we take, the retentions and excretions, motion and rest, sleep and watching, and the various passions of the mind (which are all natural enough), are called by old writers *non-naturals;* and others, seeing the strangeness of this expression, have called them *things necessary to life;*—that is to say, things which are necessary in order to the continuance of our existence. The great sources of disease are an aberration from that state of all these which conduces to health. For example, with respect to air; vitiation, I need not say, produces a variety of diseases; such as fevers, and many others. I need not say how much our health must depend upon the wholesomeness of our food and drink, and upon a proper quantity of them. I need not say that the body cannot bear more than a certain degree of exertion,—that many diseases arise from fatigue; and that, on the other hand, excessive rest and indolence produce a collection of fluids in various parts of the body,—stagnation, plethora, fatal dropsy, and various organic diseases. So with respect to sleep and rest, alternations are absolutely necessary; and we every day see persons who, for want of sleep, become the victims of fever, and gradually of the most destructive diseases. And so with respect to the passions of the mind;—there is scarcely a disease (with the exception of those that depend upon contagion) to which they do not give rise; nor is there any one part of the body, in fact, exempted from disease through the passions of the mind. No one can imagine what a vast number of diseases, not only functional but organic, arise simply from unpleasant passions of the mind;—that is to say, from grief and deep-rooted sorrow, from violent anger, from regret and chagrin, and all those feelings which are of an unpleasant character. On the other hand, it is also to be remembered, that passions of the most agreeable kind,—excessive joy, for instance,—may have almost as injurious an effect, as those which are of an opposite character.

With respect to the first of these non-naturals, the *air*, it may injure the body by its weight or levity, by the various electrical qualities which it may possess, by its temperature, by its dryness, and by its moisture. Various winds have various effects upon the human body of the most curious kind, according to the countries, or districts, or parts, over which they pass. With respect to temperature, it injures the body not only by its height or lowness, but also by its vicissitudes; and not only so, but accordingly as it is applied partially or generally to the body. A temperature that would do no harm if it were continued, would be productive of serious mischief if it suddenly succeeded an opposite temperature. A temperature which would do no harm if applied throughout the body, frequently does great harm if applied partially. Every body knows the danger of suddenly cooling, if the body be over heated and fatigued; and of

a draught applied to any one part of the body. Included, perhaps, under the head of *air*, may be mentioned various effluvia and various odours; as they are transmitted through the air.

Upon *food and drink*, another source of disease, I need say but very little; they may be injurious either by their quantity or quality.

As to what are called *excreta* and *retenta*, let us speak first of retenta. The great thing here alluded to by old authors, is the blood; and it was supposed formerly, that it might greatly injure the body mechanically by its excess, either absolute or relative; so that *plethora* formerly occupied a very prominent part among the causes of disease. You will find some curious distinctions made by old authors on the subject of plethora. They called it absolute or true, or *ad vires*, or *ad vasa*, when the quantity of blood was absolutely in excess; they called it *apparens* when the blood was in its natural quantity, but expanded. They fancied it might be expanded by heat, and in that way a temporary plethora be induced. Plethora, too, was divided again into a third variety—*relative*. When there was no actual increase of blood, when the blood was not expanded improperly by heat, but when the space in which it moved had become too small, this was called relative plethora, or *plethora ad spatium;* where the vessels, it was supposed, became contracted, and the blood was in excess to merely the contracted space. Plethora, however, certainly may be either *general* or *local*. A local plethora is what in modern language is called an inflammation or congestion, just as the case may be. When the blood is really in excess, I believe that it is generally of too rich a quality; that there is too little of its watery portion, and too much of the crassamentum. I need not say, that the opposite of plethora is *inanition*. This is a state which is induced by excessive discharges, or from the want of food; so that the blood which was in the body is let out, or the blood which naturally escapes in the various excretions is not replaced. Anæmia, or bloodlessness, but more properly a watery state of the blood, will arise from an ill understood, I may say, not at all understood, state of the system; in which, although food is taken, nourishment is but very sparingly extracted from it. Cases of this description are seen continually: chlorosis is one of this kind. But the blood certainly is sometimes in fault with regard to its constituents; not merely as to whether it is too rich or too poor, but (as would appear by some recent experiments of a friend of mine, Dr. Stevens; who is about to publish a work on Fever; and of Dr. Clanny,)* by the saline ingredients erring in quantity; so that the blood, in many cases of disease, is absolutely deficient in its saline particles. It is evident, however, that diseases of the solids themselves will sometimes cause these aberrations of the blood; so that the blood itself is not the cause of the

* These works have since been published; and are entitled, "Observations on the Healthy and Diseased Properties of the Blood; by William Stevens, M. D.;" and "Hyperanthraxis, or the Cholera of Sunderland; by William Reid Clanny, M. D."

disease. It may become an instrument of farther disease; though disease of the solids originally may have given rise to the aberration of the vital fluid.

With respect, however, to the *excreta*, you may easily conceive how excessive discharges will occasion various diseases. The excessive discharge may consist of blood, of bile, of secretion from the alimentary canal—fæces, of urine, of perspiration, of saliva—that, however, seldom does much harm—or of semen. These are the fluids which particularly escape from the body, and the escape of which may do harm. But with regard to the latter,—the discharge of semen,—although one must suppose that the simple excessive loss of the fluid must be injurious, yet it is very certain that the mode in which that fluid is lost, exerts a very great influence upon the constitution.

In regard to *motion* and *rest*, I need not point out the ill effects of sluggishness on the one hand, or of fatigue on the other. Nor with respect to *sleep and watching*, need I make any remarks; for they come under the same head as motion and rest;—sleep and watching being to the brain, what repose and motion are to the body.

With respect to the *passions of the mind*, I mentioned that they are a frightful source of disease;—much more so than is commonly imagined. An immense number of cases of disease of the heart, and disease within the abdomen, as well as of the brain itself, arise, I am certain, from unpleasant passions of the mind. However, it is not merely *unpleasant* passions that effect the body injuriously; violent emotions of the most *pleasurable* kind, will sometimes operate in the same way. History relates many accounts of persons who have died from excessive joy.

Besides those circumstances, however, which I have just mentioned, the body is liable to injury from two very common sources; one of which is *poison* of various sorts; which poison may enter the system by the surface, by the breath through the medium of the lungs, or by being swallowed; and it is a very curious fact, that many poisons which act offensively when admitted into the body one way, have no effect when admitted in another. I believe it is a fact, that the poison of hydrophobia, or the poison of a serpent, may be swallowed with the most perfect impunity.

In addition to poison, the body suffers much from *mechanical injuries*. Mechanical injury, of course, is a cause that may affect almost any part of the body.

Among the *causes* of disease which chiefly act by giving a predisposition, we may mention that of *age*. All periods of life are subject to their own diseases; whether we divide them with Shakspeare into seven, or with those authors who mention five, or those who mention more. Every age is particularly liable to certain diseases. For example, you rarely see gout in an infant; nor is it common for old persons to have the symptoms of acute hydrocephalus. In short, every age seems marked out as particularly liable to be, if not destroyed, at least impaired, by particular diseases. The same is

the case with respect to sex: each sex is particularly liable to its own affections. Hysteria, which occurs only now and then in the male, occurs far more frequently in the female; and even when there is no reason to suppose an affection of the uterus. Of course there are certain diseases which can affect but one sex.

As to temperament, disease depends much upon it. We are all of some temperament, or some combination of temperaments; but excess of one temperament gives a great liability to disease. You know that the usual divisions of temperaments are four;—the sanguineous, the melancholic, the phlegmatic, and the choleric. The *sanguineous* is marked by smoothness of skin, softness of hair, a quick pulse, a warm sarface, great excitability of the whole frame, and generally a fair skin with florid complexion. The *melancholic*, on the other hand, is marked by a slow pulse, a dark swarthy complexion, dark and strong hair, and less susceptibility of emotion, —that is to say, of sudden violent emotion; although, when certain emotions take place, they are said to be more continued. The *phlegmatic* is marked by torpidity, paleness, and flabbiness. The *choleric* is characterized by reddish hair, and great excitability. However, these divisions, made by the ancients, are not so much attended to now. We certainly often see these temperaments strongly marked; but they are all infinitely combined.

An attempt has been made, within these few years, to divide temperaments differently; according to the activity of particular parts. For instance, some persons have the chief activity in the head. They have a large intellectual development of the head, as some people say; and that would be called, perhaps, the *cerebral* temperament. Others, again, have a large broad chest, with a considerable development of all the muscles; and this is called the *thoracic*, or *muscular* temperament. Again, others are sluggish,—prone to eating and drinking, with large bellies; and are said to have the *abdominal* temperament. Now it is rather an abuse of terms to call these states, *temperaments;* for I think the word "*temperament*" rather refers to the constitution and character of the frame altogether. Yet there is no doubt that these divisions occur; for you see some persons all intellect, others all muscle and chest, and some portly, with their big bellies and lean pates,—their heads suffering in proportion. In truth, Dr. Thomas entitles his work,—"Physiologie des Temperaments ou *Constitutions.*"

However, whether you choose to call these conditions, *temperaments* or not, it is well to know that these persons will suffer various diseases, according to the division under which they come; just as is the case with regard to those who are of a sanguineous, phlegmatic, choleric, or melancholic temperament. They will be particularly liable to diseases of the head, if they be of the cerebral conformation; they will be subject to affections of the chest, not of a phthisical, but of an inflammatory kind, if they have a full thorax; and of course they will be subject to various hepatic, and other abdominal diseases, if the abdomen gain the sway. It is worth

while to attend to this other division of temperaments; although, perhaps, the term itself may be objectionable.

Besides original temperament, acquired peculiarities take place by a long residence in a particular climate. By long residence in a particular spot, certain dispositions of the body are engendered; and a second nature, if I may so say, is produced. The various occupations of life have the same effect;—the various trades have their various diseases. On this subject you cannot, I believe, read better works than Ramazini's* and Thackrah's.† Custom and habit, whether referable to trade or situation, or action, or any other circumstance, have also very great effect in producing or in preventing the cure of disease. For example, if a person be in the habit of dram-drinking, and has a sore, nothing is more common than to see that sore not heal, in spite of the best surgical treatment, till the person is allowed his dram. After a surgical operation a person has been known to sink, through the surgeon's not having been aware that the individual had indulged in some bad custom, until it had become a bad habit. From the want of a patient being allowed a quantity of gin in the course of a day, he has died after an operation; whereas he might otherwise have done well. This has been strikingly shewn in other cases, where the knowledge was happily attained; and a good allowance of gin, after some severe accident, has caused every thing to go on well, though the patient at first appeared sinking. Bad habits are, therefore, sometimes to be *indulged;* although they should certainly never be *acquired.*

Independently of what is called *temperament,* an individual may have a particular disposition not acquired; it may be born with him, and be hereditary. A peculiarity is sometimes so exceedingly singular,—so totally different from what we observe in other people, that it is called *idiosyncracy.* It is nothing more than a peculiarity, either original or acquired by habit; and sometimes it is only connate, while sometimes it is hereditary. As an instance of this, you will sometimes find a person who cannot eat a certain article of food. I recollect seeing a young woman who could eat the hardest salt beef, and digest it well; but if she took a raspberry, or currant, or any fruit, she was instantly thrown into the most violent spasms of the stomach; so that a stranger would have fancied her life in danger. These are called *idiosyncracies;* and it is of great use to know them, because some persons are peculiarly affected by certain remedies; and that which is a proper remedy for the disease, may be improper for a particular patient.

So much, therefore, with respect to the causes of disease in general,—general *ætiology;* and I will now proceed to consider the third branch of general pathology,—the symptoms of disease in general, —*semeiology* or *symptomatology.*

I believe I mentioned that *symptoms* comprehend everything which is observed in a patient out of the course of health;—*singulæ quæ in*

* "Treatise on the Diseases of Artificers," translated by Dr. James.

† "Effects of Arts, Trades, and Professions, on Health and Longevity."

ægro prætcr naturam observantur res. The most evident, and the most constant of these, are put together; and are said to constitute the disease. You will recollect that the disease is not the *cause* of the symptoms; but that the disease is the *collection* of symptoms. I mentioned this, and illustrated it with respect to jaundice and to epilepsy; the outward signs of which are jaundice and convulsions, while the inward state is the proximate cause.

Now these symptoms may be *essential*,—they may be what is called *pathognomonic*, or they may be *accidental.* The *essential* symptoms of disease, are those which are necessary to make the disease,—to constitute the idea of the disease. You cannot, for instance, suppose a patient to have pleurisy, unless there be a degree of feverishness, with sharp pain of the side, increased upon respiration, together with a cough. These symptoms would be called the essential symptoms of the disease; yet no one of them would make the disease. A patient may have feverishness without pleurisy; or a sharp pain in his side without pleurisy, because it may be muscular or it may be neuralgic; or again, he may have cough without any pleurisy. These are then, you perceive, essential to the disease altogether, but no one of them constitutes it. If, however, a symptom be so important to the disease that this cannot be present without it, then it is called *pathognomonic*—a symptom without which you could have no conception of the existence of the disease. There are, however, but very few of these symptoms. In jaundice, the yellowness of the skin, of the sclerotica, and of the nails, is pathognomonic. Without making any farther inquiry, you may be sure that the patient labours under jaundice; but in general we make out the disease from the groups of essential symptoms, and from taking into consideration every circumstance of the case. Besides these symptoms, others are *accidental.* Many cases have symptoms which are merely accidental, and are not at all necessary to the disease. The disease has frequently existed without them.

You will find symptoms also spoken of as *positive* and *negative;* and it is of great use to attend to the latter. A negative symptom is, perhaps, an improper expression. A symptom must, properly speaking, be positive; but, from the absence of certain circumstances, of certain symptoms, you frequently make out the nature of a disease. If there be two diseases with certain symptoms common to both, but one of them has a symptom which the other never has, then, if that symptom be absent, it enables you to make out the true nature of the case. Hence the absence of certain symptoms is frequently of as great importance to be attended to, as the presence of others.

Now, from the presence of the symptoms chiefly, but not entirely, we make out the character of the disease; and the determination of the character, the name and nature of the disease, is called the *diagnosis.* To speak again of jaundice; from the yellowness of the skin, the whiteness of the fæces, and the dark colour of the urine, you make your diagnosis, and say the disease is jaundice; although, indeed, you may do so merely from the yellowness of the skin and

of the sclerotica. But you will frequently find that your diagnosis is not easily made from the symptoms alone. You must look into the exciting and predisposing causes of the disease; you must ascertain what predisposition the patient is likely to have; you must also ascertain to what exciting cause he has been exposed; and then conceiving what it is likely would ensue, and observing what actually has ensued, as far as you can judge, you are enabled much better to form a conclusion as to the real character of the affection. You will find your diagnosis also materially assisted by attending to the history of the case;—not merely observing the symptoms that present themselves to you, but inquiring carefully of the patient the whole story from the beginning. You will thus ascertain whether these circumstances confirm what you suppose to be the nature of the case. You will also find it of great importance, in making out the character of the disease, to learn the effects of any previous treatment that may have been adopted. If you learn that vigorous treatment has been employed, and has had no effect whatever, you will doubt very much as to the propriety of the view which has been taken, with respect to the nature of the affection. In making a diagnosis, all these points are to be scrupulously attended to.

It is in making an accurate, careful diagnosis, that the medical practitioner chiefly shines. When the nature of a disease is once ascertained, it is no difficult matter to treat it. Other qualities of mind are then required;—frequently only courage, or mere perseverance; but it is in making a diagnosis,—in ascertaining the character of a disease, that the scientific practitioner outshines the inferior. Unfortunately this is a point not attended to as it ought to be. Many persons pride themselves in being good practitioners; because, without knowing what is the matter, they can say what will do good. It is an unscientific way of proceeding; and, even if I could not practise better for making a good diagnosis, still I would be as particular on that point as possible, for the sake of observing a good general rule,—for the sake of endeavouring to treat the patient better than I otherwise could, notwithstanding all my conceit; and for the purpose of being ready to meet any unexpected emergency that might arise. A medical man who will not take the trouble to establish a diagnosis, is just like a surgeon who will not condescend to learn the anatomy of hernia; but who says that he knows if he cuts this way and that way, he shall liberate the entangled parts, and accomplish the operation as well as the best. I have witnessed this; but, then, what are such men when a difficulty arises? They are lost in perplexity, and glad to apply to those who know better. It is impossible to be too minute in making a diagnosis.

You have not only to make a diagnosis as to the general character of the disease, but you have to ascertain what variety of the affection it is;—whether it is one with strength or weakness; and to weigh the minutest circumstances respecting the case. This is,

perhaps, an exercise of patience; but it is an exercise highly gratifying;—especially when you find you have made a correct diagonsis.

The judgment you form as to what will happen in a case, is called *prognosis*. In order to make a very correct prognosis, it is best to make an accurate *diagnosis;* for if you do not know what the affection is, you will often be unable to tell how it is likely to terminate. For the sake of making a prognosis, you must observe all the symptoms, and learn the history of the case,—exactly as in making a diagnosis; but there is something more to be done than that. You must know the direct tendency of the disease;—the course which the disease is always inclined to run;—the course which it is likely to run in the particular individual, according to age, according to sex, according to previous habits,—according to all those circumstances which I have previously mentioned, as to individual peculiarities; and accordingly as you have it in your power to put into practice requisite curative means. There are some cases in which, if we were allowed to practise our art freely, we should make a favourable prognosis; but in which our hands being tied, (as they are when others ill informed or inactive are called in over us), we must give an unfavourable prognosis; simply because the patient must be allowed to die. In making a *prognosis*, there is frequently less skill required than in establishing a *diagnosis;* for some persons, with a sort of tact, will tell whether an individual is in danger or not, without knowing what is the matter with him. Many persons who have no knowledge of medicine, or at least very little, have such strong perceptions, that, from the aspect of an individual, and from general observations of their own, they are enabled to give a very correct prognosis, either favourable or unfavourable. This I know to be the case. There are a great many intelligent officers who, from seeing their men fall around them in battle, and sick in hospitals, have become, in one sense of the term, good doctors; and though they are not able to cure the disease, or tell what is the matter, they will be able to give a shrewd and correct guess as to how matters will turn out. But although some people, by nature, are well qualified for this, while others are not, yet the medical man must be taken as he is; and whether he does or does not possess sufficient natural sagacity to make an accurate *prognosis*, it is his duty to make as careful a *diagnosis* as he can; in order that he may make as good a prognosis as possible. If his intellect be not of an acute description, yet, by knowing the case, and by the aid of science and minute observation, he will be able to form as good an opinion, as the man who by nature is qualified for these things; and if with science and observation be combined native sagacity, then I need not say that his prognosis will be much superior to that of the individual, who trusts alone to his natural powers.

You see therefore what is meant by *diagnosis*, and what by *prognosis;* and I cannot urge upon you too strongly the most careful attention in establishing the former. Whether you can cure the

patient or not, you should make it a solemn rule to investigate the case to the utmost. It is only by this that we can profit ourselves, or that those who come after us can profit. If we be not careful, we cannot advance science; and the next generation will be none the better for us.

There is a term which I have not yet explained, or even mentioned;—namely, the word "*diathesis.*" When the body is particularly predisposed to any kind of affection, it is said by some to have that particular *diathesis*, or a disposition to it. However, you will generally see this term limited to imply two states;—an inflammatory state; and a state of weakness, or debility, if not of putrescency. You will hear the one called the *phlogistic*, or *sthenic*, which you know means strong; and the other called the *asthenic*, or weak. When a person, for instance, is in a high state of excitement, with a full and strong pulse, and increased heat of body, labouring under any particular complaint, he is said to have the *sthenic* or *phlogistic* diathesis;—in fact, an active inflammatory state of the body. If, however, the state be one of debility, so that any disease which is actually present is attended with weakness; and still more if there be extreme collapse, and a disposition to putrescence, then it is called the *asthenic* diathesis. I believe, in modern times, these terms are rarely used, except when a certain disease is present; so that they really imply, not the disposition to disease, but the character of the disease;—and, indeed, as to whether it is actively inflammatory,—attended by strength, or whether it is attended by weakness; but even of these two, you seldom hear persons speak of either in this country, excepting the phlogistic.

I may mention that the word "*diathesis*" is used by old authors in other senses;—to signify, for instance, the general disposition to disease at any particular season; so that the constitution of the period was said to be its diathesis. If the disposition of any particular season of the year,—not the regular seasons,—was to produce such and such kinds of disease, the word "*diathesis*" was applied to that disposition;—to the disposition, if I may so speak, of the atmosphere at the time. But, generally speaking, the word is used as I have pointed out above. However, you will sometimes find a constitutional disposition to certain diseases, when present, called a diathesis. For instance, it is not uncommon, in practice, to hear persons talk of a "scrofulous diathesis." Where a person has every look of scrofula, with its actual presence in one part, you will hear individuals say,—"that is a scrofulons diathesis." A disposition to many other kinds of disease, when present, is sometimes called a diathesis; but it is the *phlogistic* diathesis of which we hear the most.

This term is sometimes used to signify that full state of the body, which would render a person very liable to an active inflammatory affection; but is certainly more frequently limited to that state when the disease has actually begun. When a violent disease begins, and there is quickness and strength of pulse, and heat, the person is said to have the phlogistic diathesis. Now and then, persons with

merely a full pulse, are said to be labouring under the phlogistic diathesis; but that state is characterised more particularly by the word "*plethora*," of which I lately spoke.

With respect, now, to those symptoms of disease, on which the diagnosis and prognosis are in a great measure to be founded. The symptoms of disease may be divided, perhaps, in one point of view, into two kinds;—those which are discoverable by the patient only; and those which are discoverable by the by-standers also, or by them alone. There are some symptoms which a patient alone can ascertain;—for example, his feelings. He it is that feels the pain, and it is a lucky circumstance that it is so; for if the doctor felt the pain as well as the patient, there are but few who could stand the practising of the profession. We know little about the pain, except from the patient's account; and in many cases, in public practice, we are deceived. We have, however, only done our duty in listening to the patient's description.

With respect to *pain*, it is of various kinds;—it may be sharp,—stabbing,—darting,—shooting,—lancinating. These are all words used by patients. At other times the pain is not of this character, but dull; and then we call it an *ache;* and sometimes patients add the word "*pain*," making it *aching-pain.* Sometimes you will have pain described as *throbbing* and *pulsating;* and you will hear patients also complain of *pricking pain*,—as though a number of needles were being pressed against them. Now these things are all of great importance to be attended to, because they shew frequently the seat of the affection; and accordingly as a patient describes his pain, as sharp, or dull, or throbbing, or pricking, so you ascertain frequently whether he is telling the truth or not; because you see, for other reasons, a probability that, if he have pain at all, it is of a particular character; and you ascertain whether his account agrees with what you would, *a priori*, expect him to describe. You will sometimes hear pain spoken of as *smarting*, and a very high degree of this is *broiling.* In some affections of the abdomen you hear a patient complain of broiling pain. It appears to be a high degree of smarting, with a sense of burning.

If pain be increased by pressure, or by the application of stimulants, then we say there is *tenderness;* but perhaps the word "*tenderness*" is more properly restricted to pain increased upon mechanical pressure. There are other feelings continually described by patients; as, for instance, a feeling of *dead weight.* This is particularly the case with respect to the head. You will sometimes hear persons complain of *fulness*,—as if a part were excessively full; and now and then this sensation arises to such a pitch, that the part feels as if it would burst; and then we call it a feeling of *tension.* A feeling of tension, appears to be a high degree of a feeling of fulness. You will now and then have patients complain of a sensation of "pins and needles." It is very different from the sensation of pricking pain,—as if needles were being run in; it is as if the pins and needles were rather blunt. It merely gives the lowest sensation of this kind,—not

amounting to pain. Pricking pain is of a very different character;—for instance, that which people frequently complain of from inflammation of the urethra in gonorrhœa. They experience a pricking pain along the urethra. But the sensation experienced when the hands and feet are "asleep," is not called *pain;*—patients say they feel as if pins and needles were there. You will frequently hear persons declare, that they have an indescribable uneasiness in a part,—a sensation which nearly drives them mad; but they will not allow it to be *pain.* I have known this sensation occur in different parts of the body. I recollect one lady who had it in the neck; so that she was obliged to walk about the room, followed by a servant rubbing her neck, night and day. Unless this was done, the sensation nearly deprived her of her senses; and her countenance betrayed the greatest distress. You will find other sensations spoken of by patients;—a *creeping*, a *crawling*, or a feeling as if water were trickling down them. There are also symptoms which approach nearly to pain,—itching and tingling; which may be almost insupportable. Tingling is a high degree, I imagine, of what is called itching, united with a sense of pricking. With regard to other sensations, there is nausea felt in one part,—the stomach; and now and then persons have an excessive sensibility of one particular sense,—of the eye or the ear, for instance.

Now all these are symptoms which the patient alone can know any thing about. We all know something about them, because we are more or less ill at some part of our lives; but the medical attendant must take the patient's word for these sensations;—at least he cannot ascertain the existence of them directly. He can only ascertain, by other symptoms, whether the patient is probably telling the truth.

Besides these symptoms, people have a feeling of great exhaustion,—of great debility; and this is a point strictly to be attended to, in forming the prognosis in an acute disease; for sometimes it is a fatal symptom. When a patient, for example, after inflammation of the bowels, has no pain, but a feeble pulse; and complains that he is so weak, that he feels as if he should die,—that he never felt such weakness in his life,—you may be almost sure he will be dead before the next day. On the other hand, this feeling is very deceptive. Women are subject to a sinking sensation at the epigastrium. They tell you they feel as if they had no inside; and are sure they are about to die; but the feeling is quite delusive. You might in the former case, after an acute disease, judge from seeing all, or the greater part of the symptoms decline, that the patient would soon get well, and that this feeling of weakness was nothing more than might be expected after severe indisposition; but you must take into account other symptoms,—particularly the weakness of the pulse. But with respect to these women, you find the pulse good; and they are able to walk about, notwithstanding all the depressive feelings of which they complain. This is a very remarkable circumstance; and I shall find it necessary to draw your attention to it, when

speaking of diseases of the stomach, and of hysterical affections. Patients, also, can alone be conscious of drowsiness, want of appetite, *inordinate* appetite, and *depraved* appetite; although, with respect to many of these things, you can often, by other circumstances, ascertain whether they are telling the truth or not. It is to the patient, likewise, that you must trust for the existence of tenesmus and of strangury;—a frequent desire to go to stool, and a painful and frequent desire to make water. All these are instances of symptoms, of which you must receive an account from the patient himself.

There are some such symptoms, too, which are derived from other senses than those of general feelings; and these are referable to the *ear*. Patients will continually complain of the most violent *beating* pulsation in their head; and frequently, too, of a *snapping* and *cracking* there. Such symptoms undoubtedly do exist; but we can take no cognizance of them. With respect to *sight*, you must depend on the patient's account for the occurrence of flashes of light before the eyes; and for the symptom so common in many diseases,—moats floating before the eyes; and for double vision, or diplopia; and likewise for the symptoms of giddiness or vertigo. On the patient also you must depend for symptoms with regard to *taste*. Some have in their mouth a bitter nauseous taste, of which you cannot judge. So with respect to *smell*;—now and then persons experience a most disagreeable odour, which no other person can notice. There was a case of hydrophobia at Guy's hospital, in which there was an instance of an accidental symptom, and that a symptom to be ascertained only by the patient;—the patient experienced a most disgusting odour. You will find that this occasionally happens in cases of insanity. Now and then the smell which the patient perceives, may be noticed by other persons; because it arises from some disease within the nose.

There are still other symptoms, of which the patient alone can give an account;—defects in the senses;—a loss of sight,—of taste,—of hearing. For all these, you must depend much on his account. So with respect to many mental circumstances; such as the loss of many desires, and a feeling of strong desires;—for all these you must rely upon the patient. You see, therefore, that in regard to symptoms, they may be divided into two classes; the first of which comprehends those which are evident to the patient alone; and the second those which are perceptible to the practitioner also, or to him only. I shall proceed now to consider those which are of the latter description. In some writers, you find *symptoms* and *signs* distinguished from each other; but I think it mere trifling to dwell upon such matters. With respect to symptoms, however, those which others observe, of course the patient, for the most part, may observe likewise.

In observing the symptoms of disease, it is right to remember that Providence has blessed us with five senses; and all these five senses it would be ungrateful, as well as unscientific, not to employ. I am led to speak in this way, on account of its being a modern

practice to employ the ear extensively. Those who do so are laughed at as innovators;—as people who take unnecessary pains, and are perhaps attempting a piece of quackery, in order to produce an impression on patients.* At any rate they are laughed at; but it will be impossible for them to be laughed at long. If nature has blessed us with hearing, to observe certain phenomena around us, there can be no reason for not employing it, when we come to observe the phenomena of disease; and if it be a fact that symptoms take place, of the most useful nature, that are cognizable by the ear only, it is our duty to employ our ears for the purpose of detecting them. We are bound, I think, to employ all our five senses in the investigation of disease. The chief, however, of which we make use, are the sense of sight, the sense of hearing, and the sense of touch; but the smell, and in some instances even the taste, may be called in to our aid;—the smell, however, much more frequently than the taste. It would be as absurd to shut our ears, as to shut our eyes; yet, because the extensive employment of hearing has only been introduced lately, those who were not instructed in this point when they were students, are, some of them, too proud to learn in their old age; and are good enough to pity us younger men.

As to those symptoms which are cognizable by our various senses, they discover themselves in every part of the body, from the head to the foot; but the two parts which give the chief symptoms to the sight, and I may say to the touch, and the chief symptoms not only in reference to themselves but to all other parts of the body, are the *head* and the *hand.* It has become the custom, in all civilized nations, to cover all parts of the body except the face and hands; and these two parts afford far more information respecting the state of the body, and respecting diseases that are present, and not seated in these individual parts, but at a distance, than any others. It is certainly a striking coincidence; but we must remember that while necessity compels mankind to keep the face, and almost always the hand, uncovered, Providence has ordained that these same two parts shall convey the chief information to others, respecting our mind and body.

With respect to the face, we observe that it gives us two sorts of information;—first, as a mere portion of the body only,—a portion of the surface which is far more affected by every change, than any other excepting the hand, and therefore so far as it is *face*; and, secondly, it gives us another description of information so far as it is *countenance*,—so far as it expresses the state of the mind, and the state of the feeling altogether. The observations which you make upon this part of the body, then, may be considered as they respect simply *face*, and as they respect simply *countenance.*

With regard to the face, as really a part of the surface of the body, if there be fullness of blood, it is shewn particularly there. If

* This is not nearly so much the case now, as it was when these observations were delivered. The laughers have not found themselves on the winning side.

you were to take the same quantity of surface in any other part of the body,—the abdomen, back, or thighs,—for instance, you would not get the same information from the part, simply as surface, as you do from the face. If the body be at all full, you see it in the face. If the circulation be rapid, and the heat considerable, it is the face that shews it; for the cheeks become tinged much sooner than any other part. If there be the least degree of coldness, you perceive it in the cheeks, nose, and lips. You discover hectic fever in an instant, by the red patch upon the cheek. If the patient be labouring under difficulty of breathing, you find the eyes immediately suffused; you find the lips more or less livid, and the whole face frequently of a leaden hue; sometimes, indeed, I have seen it black. If it be jaundice that the patient labours under, you discover it instantly in the face. By one part of the face you will detect it, long before it appears in any other part of the body, except the hand; and when the disease has nearly declined, it is in the face as well as in the hand, that it lingers the longest. In the white of the eye you perceive the presence of jaundice, before it is apparent any where else, except at the root of the nails. If the patient be bloodless, you first discover it in the paleness of the face, the want of the usual vermilion of the lips, and the absolute paleness of the tongue. There is not a white crust upon the tongue, but that organ is absolutely blanched. Two of the chief marks of scrofula are shewn in the face; —the dilated pupil, and the tumid under lip.

Then, again, in the *tongue* you have an immense number of symptoms. The body cannot labour under inflammation in any part, but the tongue becomes affected by it. If there be strength, generally the tongue becomes white; if there be inflammation within the stomach and intestines, it frequently becomes red,—red at the tip, red at the sides, perhaps red all over; and perhaps there are red stripes upon it. If the stomach be simply in a state of dyspepsia, and the bowels confined, you have the tongue covered with a yellow thick mucus. The indications of the tongue are innumerable; they have been observed from the remotest ages; and no one would think of finishing his attention to a patient, without looking at that organ. The tongue sometimes will become brown, sometimes it will become absolutely black. In what are called putrid diseases, where there is a high degree of debility, and a disposition to putrescency, the tongue will become black. In other cases it will become glazed throughout, shining, and glassy; and in this state it will frequently be cracked into the bargain. In other diseases, again, as, for instance, in *delirium tremens*, it is frequently covered by a creamy mucus;—not a thick yellow mucus; but a mucus more like cream than any thing else, and so liquid that the tongue is moist. I need not insist upon the great importance of that part of the face or head —the tongue.

Then, again, if we take the *eyes*. We discover in a moment whether there is great excitement of the brain going on, by the sparkling of the eyes, by their rednses, and by their being watery.

We can discover whether a person has headache, by the oppression shewn in the eyes; and in some affections of the head, the eyes squint—are contorted in various ways. Frequently, too, when a person is asleep, he does not completely close his eye; and that is often an indication of disease. Then, again, the state of the pupil is very characteristic of many affections of the head. If you take the eye altogether, there is generally an appearance of brilliancy, or of dulness; or if you take particular parts, there is a dilatation of the pupil, or on the other hand, an extreme contraction; and all these things it is of the highest importance to observe, because they point out particular affections. For example, if you take apoplexy, you see the pupil usually dilated, and you know that there is great oppression of the brain; but if the pupil be amazingly contracted—reduced to a pin's point, you may almost to a certainty say that the patient will die: I do not say it is *absolutely* certain, because it is wrong to speak positively. If a person have taken opium in a large quantity, there is the same effect produced—generally a great contraction of the pupil; and where you are not with certainty informed of the patient having taken this narcotic, the appearance I have just described will assist you materially in forming the diagnosis. Then besides the strabysmus, and the open state of the eye during sleep, you have contortions in various instances; particularly if a child have convulsions of another part of the face,—convulsions of the muscles of the lower jaw; so that he gnashes and grinds his teeth together during sleep, and his eyes roll.

From the state of the *orbit*, or at least the contents of the orbit around the eye, you judge of the extreme debility, exhaustion, and emaciation of the patient. If the parts around the eye become absorbed, the eye sinks back in the orbit, and a hollowness is produced, which is characteristic of extreme exhaustion and inanition: and this alone will enable you to say, in a moment, how much worse the patient has become.

From the face *altogether*, simply as a part of the body, you are able frequently to tell at once that the lungs are affected, or that there is a great disposition to affection of the lungs. It is impossible sometimes to doubt for a moment, that if the patient be not labouring under phthisis, he soon will. From the peculiar appearance of the countenance altogether, particularly from the appearance of the eye, its transparency, together with the languor of the cheeks, or the flush upon them, no doubt can exist as to the nature of the disposition. And with respect to other parts, you can tell that the patient is labouring under organic disease of the abdomen, from the look of the cheeks. I do not say it is so always; but the appearance of the face is of great use in enabling us to detect that circumstance.

In organic diseases of the stomach, intestines, and surrounding parts, you have often a faint greenish yellow appearance of the face, something like that of a faded leaf, with minute vessels; not forming a patch of red, as in hectic fever: but reticulated, like net-work, on the cheeks. Where you observe this, there is generally some part

of the abdomen in a state of organic disease. You discover in a moment the strength of a patient by his countenance. When you are attending a case of fever, there is frequently no occasion to ask a question: you can tell whether a patient is better or worse, by viewing his countenance. So with respect to many other diseases;—when the patient is getting either better or worse, you can tell immediately by his face, what change has taken place subsequently to your previous visit. Every body makes this observation; and hence, when an individual meets a friend, he tells him that he looks well, or he is sorry to see him ill. If the appearance of the face be so characteristic of the state of an individual's health, even in the judgment of an inexperienced person, how much more so must it be in that of the medical man, who studies minutely every shade of change and difference that takes place in each particular part!

Speaking of convulsions of the face,—such as squinting or contortions of the eye, or a grinding and gnashing of the teeth,—I may state that there is one set of convulsions about the mouth, mentioned under the term "*risus sardonicus.*" It is a horrid sort of grin, which you often see in persons who are about to expire. To me it is the most terrible of all sights. It has been thought to characterize inflammation of the diapragm; but I do not know whether that is the case;—inflammation of the diaphragm is a rare affection. It is common, however, for persons at death's door to grin frightfully. The phenomenon receives its name from a herb of a poisonous quality, which grows in Sardinia; and is said to produce in those who eat it, this horrid contortion of the mouth, just before death.

You likewise see a singular appearance of the countenance, mentioned by almost every writer, under the title of "*facies hippocratica.*" It is the usual appearance of the face, immediately before death; when the body is at last completely exhausted, and life about to be resigned. It is so called, because Hippocrates gave a most accurate description of it. His description is,—"sharpness of the nose; hollowness of the eyes; collapsed state of the temples; collapsed and contracted state of the ears; the edges of the nostrils everted; the skin of the forehead firm, tense, and dry; paleness of the whole face, perhaps even blackness, or a livid and a leaden appearance." These are the characteristics of the *facies hippocratica.* When you see a person dying from a disease that has exhausted him gradually, this is exactly the appearance of the face.

I may mention (although it is not in regular order) that among the symptoms of phthisis, one is taken from the teeth;—not that all phthisical patients have the same state of the teeth; but in many there is beautiful whiteness of the teeth, with a degree of transparency and brilliancy, comparatively seldom seen in persons who are not disposed to phthisis.

Speaking of eruptions, I may mention that exanthematic and acute inflammatory cutaneous diseases, shew themselves much better on the face, for the most part, than anywhere else. It is on the face first that you discover a child is going to have the measles. When

a child is in a state of pyrexia, and you are sure it is going to be ill of something or other, the face will first disclose it, if it be the measles. There you have the running of the eyes,—there you have the fullness; and the first papulæ that present themselves, are generally seen on the face. Most acute cutaneous diseases attack the face among the earliest parts; or if they do not, yet the face, if affected, generally discovers the true nature of the disease better than any other part; the reason of which is, that the face is much more vascular than other parts. The cheeks are more or less inclined to be red, in most individuals; and the least feverishness reddens the face, more than any other part of the body; and therefore it is that acute cutaneous diseases, generally shew themselves best in that situation.

With respect to the face, simply as a part of the surface of the body, you discover paralysis in it more easily than in any other part. If a person be sitting still, you cannot tell whether his arm or his leg is paralyzed; but if his face be paralyzed, you will generally in an instant discover it, by the part affected being drawn to the opposite side, and perhaps from his inability to swallow his saliva. And so with regard to the tongue;—the moment the person begins to speak, you frequently in paralysis can discover the existence of the disease. The tongue frequently, in paralysis, moves to one side; but generally in an opposite direction to that in which the mouth is drawn. In fever, and other diseases, the tremor of the tongue is very characteristic. In general the whole body trembles; but the tongue does so particularly. In *paralysis agitans*, though the person lie still in bed, yet if he put out his tongue, it is seen to be in a great degree of tremor. In cases of dyspnœa and apoplexy, the tongue is swollen. But the face is particularly indicative of the general state of the individual's mind, and of the general state of the strength likewise; and we then, perhaps, should rather call it the *countenance;* and speak of the *countenance* instead of the *face;*—the "*countenance*" being the term generally used in reference to the state of the feelings. You will judge directly whether a patient is in pain or not,—whether he is suffering, by the countenance. In cholic, and in enteritis, the agony is so depicted in the countenance, that you discover in an instant that something must be wrong. I need not say that, in insanity, that passion of the mind which is predominent, discovers itself in the countenance. You may at once detect a good natured, a furious, a proud, or a desponding maniac. You may also discover much by the way in which his head is carried, to say nothing of his countenance. Those that are proud, carry the head upright; those that are cast down, carry it the reverse. But the countenance, independently of the position of the head, is indicative of the character of the disease; and again, an idiot is almost immediately discovered by the expression of his face. You ascertain in a moment, by the countenance, what the person's feelings are with respect to strength as well as to comfort; and what passions of the mind are predominant. You discover, as I before-mentioned, whether a person is better by

observing his face,—by noticing whether it looks fuller; but you discover much from the very expression of the countenance. You see, therefore, what a vast source of information is given by the face, not only with respect to affections of that particular part, but with respect to all other parts of the body.

Besides the general expression of the face, however, I must mention that you learn a great deal of the patient's feelings, by the attitude of his body. In fever nothing is a more unfavourable omen, than for a patient to be seen lying on his side at first, and gradually getting on his back, till he lies altogether supine; but when he sinks also in his bed, the case becomes still more alarming. The reason is simply this.—More muscular strength is required in order to lie on the side, than on the back, and to remain in a firm posture than to sink down; and therefore, when a patient sinks down, it is an indication that his strength is nearly exhausted. You discover a great deal, too, by the restlessness of the whole body. One of the most unfavourable symptoms, in many diseases, is extreme restlessness. You may have restlessness in women from mere fidgets; but in acute diseases, when great debility has come on, restlessness is often one of the fatal symptoms.

Of course, if disease take place in the face locally, it will show itself there as in other parts of the frame; whether it be swelling, mortification, local cutaneous disease, or whatever else may happen to it.

But to go to the *hand*,—the part which, together with the face, in all countries, civilized and uncivilized, is most exposed. In the hand we have very great indications; though certainly they are not so strong as in the face. The hand is one of the extreme parts; and shows the first fall of temperature. It is one of the first parts that become cold; exactly as the nose and ears do in the head. I believe the difference between its temperature in fever and in health, is often greater than the difference of the temperature of most other parts of the body. A cold sweat is shown in the hand, amongst the earliest parts; and the very hectic fever which flushes the face, flushes also the palm of the hand, and indeed the sole of the foot; but it is shown particularly in the palm of the hand, from the greater fineness of the integuments. Difficulty of breathing again, discovers itself by the appearance of the nails. If you observe in the difficulty of breathing a purple hue of the lips, a fullness and a leaden colour of the face, and a purplish colour of the eyes, you discover likewise a purple hue of the nails,—at least the parts under the nails. As I mentioned, in jaundice, that the disease appears first at the roots of the nails, as well as in the sclerotica; and that after the disease has disappeared from the rest of the surfaces you will discover it still lingering in the system by the yellownes, observed in the same two parts,—so, I believe, the changes with respect to the eyes and nails go on, *pari passu*, in dyspnœa. The dryness of the hand, its mordent heat, its clamminess, its firmness, and softness, the very grasp of the patient,—are all significant. If

phthisis is often seen in the eye, the ends of the fingers are no less indicative of it, or of some other internal scrofulous affection.

Besides all this, it is in the hand that we easily make the most important conceivable observations, upon the state of the circulation. It is in the hand, or at least at the wrist, that we feel the pulse much more easily than at any other part of the body. The same observation might be made any where else; but it would be done far less accurately, and with far less ease, than at the wrist. With respect to all other observations,—about temperature, about heat, about cold, about clamminess, and about sweats,—I think they are not only all made much more accurately in the hand than any other part, but that the hand appears to be affected by these particular symptoms, more altogether than most other parts of the surface of the body.

In regard, however, to the *pulse*, great indications of disease are taken from it. You will find the pulse generally spoken of in the first place, as great or small,—*pulsus magnus*, *pulsus parvus;* you find it mentioned likewise as strong or weak—*pulsus validus*, *pulsus debilis;* and as hard or soft—*durus*, *mollis*. A pulse may be large,—may be considerable, and yet not hard; a pulse also may be hard, and yet by no means large,—on the contrary, exceedingly small. A pulse is not necessarily strong because it is large; neither is it necessarily weak because it is small in volume. If a pulse be both hard and large, it is a strong pulse also; if a pulse be small and soft together, then it must be considered as weak. Mere softness may be such as to amount to weakness; and if it be exceedingly weak, you may extinguish it by the least pressure of the finger. This pulse has been called *pulsus vermicularis;* and among us *fluttering*, if it be also quick. It is a pulse easily recognized in practice, and, in many cases, indicates death to be at hand. If a pulse be exceedingly hard, and at the same time small, then it has been called a *wiry* pulse. A wire is necessarily fine and hard; and a pulse which has the same attribute, is called a wiry pulse. This is different from a thready pulse, just as thread is different from wire. A thready pulse is merely that which is small, soft, and weak;—a vermicular motion, hardly worthy of the name of a pulsation. It is chiefly in violent inflammations of the abdomen, that you have the wiry pulse; however, you must not depend upon the pulse only in such cases. If there be other symptoms of inflammation of the stomach, or intestines, or peritoneum, you must not say that is not the disease because the the pulse is not wiry. These are the qualities of the pulse, with respect to its volume, solidity, and force;—large or small, hard or soft, strong or weak.

But there are other varieties of pulse, taken from its *rate*. A pulse may be quick, and a pulse may be slow; there is the *pulsus frequens*, and the *pulsus rarus*. The pulse will sometimes go up to 160; sometimes it will go beyond that, so that you cannot count it, especially if weak; but then you can ascertain the state of the cir-

culation by the heart, where you can count 200 and upwards with perfect ease, when you cannot count the pulse at the wrist. You find a distinction made with regard to a frequent pulse;—you find a *pulsus frequens* and *a pulsus cœler*. *Frequens* is where there is a large number of strokes in a given time; and *cœler* is where the strokes take place in a short and abrupt manner. *Pulsus frequens* and *pulsus rarus* are opposite to each other; the former being a rapid, and the latter a slow pulse. The opposite of the *pulsus cœler* is the *pulsus tardus;* in which, whatever number of beats take place, they occur in a gradual manner. In England practitioners calls this pulse a *jerking* pulse;—"*jerking*" and "*sharp*" are our terms corresponding to *cœler* in regard to the pulse. No matter whether it is quick or not, we say it is a sharp or jerking pulse; whereas, on the other hand, that which takes place as it were deliberately, is called *pulsus tardus*.

I may mention the great importance of feeling the pulse at both wrists. If you feel the pulse at the left wrist only, you may often think that the patient, from extreme debility, cannot bear bleeding; but if you feel it at the right also, you will frequently form a very different opinion. Nothing is more common than for the pulse at the two wrists to vary exceedingly; and it is the pulse at the right wrist that, in the greater number of cases, is the correct guide. The difference is so great in so large a number of cases, that it should be a general rule to observe both pulses. I never myself have seen the pulses different in point of *time;* but there is a great difference in respect to *force*. It is also certainly right, in cases of great nicety, where you are in doubt as to the means you are to use, to examine likewise at the heart; and in cases of local disease of that organ, it is also right to examine the heart itself; for, in some diseases you will have simply, from an affection of the heart, a very violent pulse, such as would lead you to bleed to a great extent; and in those cases, the pulse is not an indication of the general strength of the patient, but receives its character solely from the disease of the heart. On the other hand you will, in some diseases of the heart itself, find a very small pulse; and on examining the heart, you hear it beat violently; but, owing to a diminution in the aperture, the blood escapes in small quantity. It is not only right to examine both wrists where there is great nicety required; but I advise you also to listen to the heart.

I should likewise mention, with respect to the pulse, that its rate, size, and force, are sometimes irregular; it will vary in its strength and size at different beats, and it will also vary in its frequency. You will sometimes have a pulse merely irregular,—beating always with nearly the same force, but beating at an irregular rate; and that is an irregular pulse in the common acceptation of the word; but besides that, you frequently find it irregular in force, size, and frequency; so that it will give a great thump or two, and then you have a number of strokes of no strength at all, and then again it will

beat violently. Irregularity, therefore, you must remember, does not refer to frequency only, but likewise to force. Sometimes the pulse intermits.

You must also of course remember, as physiologists, that the pulse differs in every age; that the younger we are, the more quick is the pulse; that the pulse of the female is quicker than that of the male; and that, generally, the inhabitants of a warm climate have a weaker pulse, than those in a more temperate latitude. It is necessary to take all these things into consideration; because, if you were to find the pulse of a child 120, and that of an adult labouring under fever likewise 120, you would commit a great error in supposing that the child likewise laboured under fever. It is necessary, therefore, to remember that the pulse varies according to age, sex, and climate; and that in young children it is particularly quick. I had an instance of the great use of examining a patient in bed, and not being contented without what is contemptuously called a mechanical examination, in an enlargement of the abdomen. I was called to visit a lady in the family way, about thirty years of age, whose pulse was about 80 or 90; but on listening to the abdomen—she being single, and having some disease, as she said—on listening to the abdomen, there was another pulsation about 128. The pulsation did not arise from any of the branches of the iliac arteries;—that was impossible; for if they had beaten, it would have been at the same rate as the pulsation at the wrists. She had a pulse of 80; something within her had a pulse of 128; and what that was, I left her to settle by herself. Being a single lady, all that I could say was, that if she waited patiently, the whole of the disease would come away to a certainty, in two or three months.

The pulse has been called, in the most ancient times, *res fallacissima*,—the most false of all symptoms; but the truth is, *all* symptoms are delusive, if taken separately: it is the collection which enables us to form our judgment. The varieties which I have mentioned, are sufficient for all practical purposes; and are the only ones that I have observed. You find in books an extreme *minutia* on this point, and I think a great deal of absurd trifling. It is the Chinese, I understand, who have made the most minute observations on this subject. They describe all sorts of pulse; such as, I dare say, no one ever observed, and such as no one ever will.

Now as to these two parts of the body,—the face, or rather the head altogether, and the hand,—our observations upon them are chiefly made by sight and by touch. However, there is another sense that may be employed with respect to the head; and that is the sense of smell. The breath that proceeds from the mouth, has sometimes peculiar odours; which, if we do not take pains to notice, we are at any rate compelled to observe. The head and the hand, of course, give all the symptoms common to other parts of the body, when they themselves are affected. When either of these parts is inflamed, the various local symptoms present themselves. It is not, however, of local symptoms that I am at present speaking;

but of symptoms indicating the state of the other parts of the system in general.

To proceed, however, downwards;—the *neck* affords a certain degree of information, but not much. A long thin neck is frequently taken, in conjunction with other symptoms, as a sign of phthisis; whereas, a short thick neck indicates a disposition to fulness of the head and chest. The pulse in the neck is also an indication of different diseases. In many affections of the head, the carotids will throb violently, so as to be seen at a distance; and, in many affections of the chest, the same circumstance is observed. Here, again, you see the necessity of attending to more symptoms than one. When you see a great throbbing of the carotids, you cannot tell whether it arises from an affection of the chest or of the head, for they both give rise to it. The pulsation of the jugulars is likewise frequently an indication of thoracic disease; a difficulty in the transmission of the blood through the chest, will give rise to a great pulsation of the jugulars. I need not say that tenderness of the neck indicates various diseases. By observing tenderness in that situation, you may frequently ascertain the existence of disease in the larynx; when otherwise you might be doubtful as to the nature of the affection.

With respect to the *chest*, it affords us a vast source of information. Its sides and its shape indicate the general constitution. Phthisical patients generally have a narrow and flat chest: the chest is contracted in various directions;—shallow and flat in the front, and narrow at the sides. If a person be disposed to apoplexy, from mere plethora and congestion, and in gouty persons, the chest is disposed to be circular. Frequently the chest is deformed; and frequently it acquires an enlargement in various parts, from disease in the pleura. When a collection of water or pus, (particularly of pus,) takes place in the pleura, it is not uncommon to find the sides of the chest become enlarged. It is, therefore, frequently of great importance in thoracic diseases to strip the patient, and look at his chest; for you may frequently discover by the eye a slight deviation in its two sides, which you cannot observe by the touch. A deviation so slight, that it would escape you if you merely resorted to measurement, is frequently perceptible to the eye. Of course, the touch will give you considerable information with respect to tenderness; and also with respect to the state of respiration, and the state of the heart,—by the thrill which you experience. In some cases of difficulty of respiration, you find under respiration a thrill; and in certain obstructions of the heart itself, you find, on pressing over a part of the heart, a similar circumstance takes place, corresponding with the action of the heart. In some cases of aneurism of the aorta, and of diseases of the heart, you find by the hand a strong pulsation.

But although the sight and the touch give you this information, there is a third sense which imparts especial aid with respect to diseases of the chest; and that is hearing. The function of the lungs differs from the function of many other parts, in this circum-

stance. It is performed with a noise; and so, likewise, is the function of the heart. The functions of the brain and the liver go on without noise; but it is peculiar to the function of the lungs and of the heart, that a certain sound should take place. If this noise take place in health,—in sound physiology, you must expect that when the function of these parts is disturbed, the physiological sound will become pathological;—that the sound will be altered; and such actually is the case. If this be the case, it is our duty to attend to it; if it be not the case, let those who say so prove that they are correct. We declare it is so; and we ask those who entertain a contrary opinion to listen for themselves.

As to the lungs, you will sometimes find the healthy sound of respiration cease altogether. A lung becomes impervious at a certain part;—the air will not go through it; and this may arise from an obstruction to the course of the blood into the lung. But it may also arise from the lung itself becoming consolidated; or from external pressure of the lung;—the dropsical pleura preventing the lung from expanding. However, you may ascertain by this that respiration is not going on in that spot. Besides an absolute want of sound, in certain diseases of the chest, you have in others an unnatural sound;—the sound of respiration does not cease, but becomes strangely altered. You have information, also, not by listening only, but by striking. If you strike the chest, the nature of the lungs in health, causes a hollow sound to be heard. The lungs are filled with air, and a hollow sound is necessarily produced. If something takes the place of air;—if the lungs become consolidated, or filled with fluid, or surrounded by it; it stands to reason that, if you then strike that part of the lung, the air being absent, you will have a dull sound. This is actually the case. These things are physical necessities;—they occur simply from the common law of physics. They must occur; and if they do, we ought to observe them.

However, nothing would be more absurd than to attend to these auricular symptoms solely. The fault of those who merely employ the ear, in diseases of the chest, is just as great as the fault of those, who do not employ it at all. There is often a sufficient number of other symptoms to point out the nature of the affection, without employing the ear; but whether that is the case or not, it is as much our duty to attend to other symptoms, as to those that we learn from the ear. You will frequently, by looking at a patient while he is breathing, find what is the state of respiration. You find that, like the pulse, it is more frequent than natural, or not so frequent as natural;—we may have the *respiratio frequens* and *respiratio rara*, corresponding with the *pulsus frequens* and *pulsus rarus*. Now and then we find respiration performed suddenly;—the inspiration and the expiration are sudden; and that is called *celer;* and the opposite state, where the chest expands slowly, is called *respiratio tarda;*—corresponding with the *pulsus celer* and *pulsus tardus*. These things may be learned simply by the sight. The respiration undergoes exactly such alterations as the pulse;—it may be regular or irregular,

slow or quick, sudden or gradual. It may be deep or exceedingly shallow,—little air being taken in at a time; and, on the other hand, you may have a full respiration. It may be full and deep,—corresponding with a full and strong pulse. I do not mean to say that the pulse and the function of the lungs, take place synchronously; but, as you have in the pulse quickness and slowness, fullness and smallness, jirking and sluggishness, so in respiration we have frequency and slowness, shallowness and depth, suddenness and sluggishness, irregularity, and so on.

When respiration takes place with difficulty, it is called, in medical language, *dyspnœa:* and if it be so difficult that the patient cannot breathe unless he sit upright, then it is called *orthopnœa.* Orthopnœa is merely an intense dyspnœa.

Independently, however, of the frequency of respiration or its slowness, you may hear particular sounds. You may hear a wheezing sound, which is called *sibilous;* or you may sometimes hear it performed with a snorting sound, which is called *sonorous.* Even without putting the ear to the chest, or employing a piece of wood as an intervening substance, it may sometimes be heard when standing at a little distance.

With respect to the *voice,* that also affords you much information. The voice is frequently suppressed, faint, harsh, and shrill; and these various changes will indicate great debility; or they will indicate particular diseases of the lungs themselves, or of the larynx, or of the air passages at large. From listening to the voice with the ear in contact with the chest, or with the intervention of a piece of wood, or any similar substance, you will frequently ascertain that the voice does not sound as it sounds in general; so that you are able to say that an excavation exists in the lungs.

From a *cough,* too, we learn much with the naked ear; and the varieties generally enumerated are slight, severe, harsh, crowing, hooping, shrieking, tearing, hacking, loose, and dry. There is an infinite variety with respect to coughs. Slight, severe, crowing, and hooping varieties, I need say nothing about. You occasionally hear a cough "tearing the patient to pieces;" and it frequently indicates more disposition to spasm than actual inflammation. Now and then I have heard a cough, which has been regularly followed by a shriek; so as to be absolutely alarming. At the end of every set of expirations, I lately heard one deep inspiration, not attended by a hoop, (as the hooping-cough), but by a shriek; as though the individual were about to have a dagger plunged into her.

With regard to the *heart,* you obtain great information by examining the chest itself. Not only by the touch do you ascertain the force of the heart; but by listening you hear various alterations in its sound. Here again it is very necessary not to attend to any one symptom, or to the occurrence of any one sound; but to attend to the whole set of symptoms. Instead of the usual double sound which you hear in a healthy person, when the heart is affected in a certain way you hear a sound as if a pair of bellows were blowing; sometimes as if

a file were in action; and sometimes as if a substance were being rasped. If you attend to these only, you may be led into error; but you frequently, at the same time, observe great difficulty of breathing on the slightest motion; you observe a swelling of the legs and a deficiency of urine; and you cannot but believe that there is organic disease. In other cases you only hear the sound, and then you would not be justified in saying there was organic disease, unless you listened time after time, and always found the same occurrence. In observing these sounds of the heart, the greatest care is necessary not to form a judgment at your first visit. You may, by attending to the general symptoms, also see a sufficient proof of organic disease; but frequently there are no other circumstances present. The auricular sounds may arise from temporary causes; and you will not hear them two successive days. This shows that these symptoms, like those of the pulse, and almost every other, are never to be taken alone; but only in conjunction with other symptoms; and only when they have been dwelt upon carefully and repeatedly.

With respect to the *abdomen*,—to descend still farther,—the chief symptoms in that region are to be observed by the sight and the touch. The hearing gives you no great information respecting the abdomen, except in the circumstance of striking it, if it be enlarged. If you strike it, especially with the intervention of some little substance, (either the finger or a piece of ivory), you learn whether the tumour arises from liquids or solids, by its emitting a dead sound, as if you struck the thigh; whereas, if it arise from mere air, you find it sound hollow, like a drum. By going over the abdomen carefully, you may ascertain whether there is enlargement of any organ; and you may ascertain the shape of an enlarged liver with the greatest accuracy;—the dulness occurring where you strike over the enlarged organ, and the hollow sound where the abdomen is in its natural state. This is the only point in which the ear is of much assistance. The ear is of the greatest use in diseases of the chest; but in the abdomen you must more particularly have recourse to sight and touch.

Frequently, if you expose a patient in the case of abdominal disease, you may discover an alteration of figure which the hand cannot at once detect. Nothing can be more absurd than for a practitioner to prescribe, at once, for a patient who comes to his house, for disease of the chest or of the abdomen. It is very well to prescribe in that way for diseases of the skin, the head, and other affections; but with respect to diseases of the chest and the abdomen, if, in many cases, you do not listen, or have the patients more or less undressed, it is impossible to form a correct opinion. You may form a good guess, and you may be right; but you will not be able to form such an opinion, as a philosophic mind would always wish.

With regard to the abdomen, by the sight you may discover enlargement, either local or general; but it is certainly by the touch that you acquire the greatest information. You may feel an enlargement of various parts; you may feel the induration of dif-

ferent viscera; and, if there be fluid, you may ascertain its existence, by the occurrence of fluctuation. But one great use of applying the hand to the abdomen, is to ascertain the existence of inflammation. Inflammations of the abdomen are in general easily detected (owing to the circumstance of the abdomen having no bony coats) by the hand pressing upon it; and it is always necessary, in acute diseases, carefully to examine the abdomen by means of the hand. In fever, and particularly in various affections of the alimentary canal, if you do not go over the abdomen carefully with the hand, you may allow inflammation to escape you; which, if neglected, may prove dangerous. In fever, at any rate, it is right every day or two to feel the abdomen carefully;—beginning at the epigastrium, which is the part most frequently affected, and going more or less all over it; but in every case where the abdomen is affected, you find it of the greatest importance to make these minute observations. It is nonsense to say that a physician is to use his pen, and a surgeon his hand. Every physician must be more or less a surgeon, and every surgeon must be more or less a physician. It is as impossible for a physician to do without the use of his hand, in the case of the abdomen, as it is for a surgeon in the case of fractures; and it is not creditable to any physician to pride himself upon not making these "*mechanical* examinations,"—as I believe they are contemptuously called.

With respect to the *excretions* of the body, the sight and the smell give us the chief information. It is by the sight that we judge, chiefly, of the character both of the fæces and the urine; the smell, however, gives certain information in these particulars; as it also does with regard to the excretion of sweat. The sweat, in many diseases, is exceedingly sour; and in others it has peculiar smells, of which I shall speak hereafter. However, we sometimes are more minute in our observations respecting the urine. At any rate, it is necessary not to depend upon the sight and the smell merely; but to employ chemical means for ascertaining its quality. It is frequently requisite to ascertain whether the urine is acid, or neutral, or alkaline; it is right frequently to see whether it contains albumen or not; and in other cases it is necessary to ascertain whether it contains sugar. The most minute observations are sometimes necessary; and, of course, it is only with respect to the excretions that chemical minuteness is at all of service.

As to one sense,—that of taste,—I believe it can only be employed with regard to excretions; and, I presume, with but one of them,—the urine. Some go so far, in professional enthusiasm, as to wish us to taste every thing; but it is not usual except in the case of the urine; and then, for the most part, it is better to get the patient to taste for himself. However, this is not *absolutely* necessary with regard to the urine; because, by evaporation, and by weighing the urine, you can easily ascertain whether it contains sugar or not. I never yet in my life tasted it; but I have no objection, in diabetes, to taste the saccharine extract, for that is not urine.

Having gone through the chief of the organs of the body, I may say that the *whole surface* together gives the same information as the head; but in a very inferior degree. We gain certain information; but it is undoubtedly far less than we gain from simply inspecting the face. From examining the whole body we learn whether there is a degree of fulness or emaciation. By observing its plumpness, we can tell whether the patient is in condition or not. We observe likewise the dryness or moisture of the skin, and the firmness of the flesh. We observe whether or not it is swollen by dropsy. It is to the surface of the body that we employ the sense of smell, with regard to the excretion of sweat. On the surface of the body we can ascertain the increased temperature of the patient; and for more minute observation a thermometer is employed. It is generally put into the *hand*,—one of the two principal parts; or put under the tongue,—a portion of the *head*. Every part of the surface of the body has its own affections; and it is there that not only the chief symptoms of cutaneous diseases,—the symptoms of all its own affections, are to be found; but there we often observe affections of parts beneath. In inflammation, for example, of the dura mater, from an injury, the surface immediately above frequently becomes œdematous. We learn the state, not only of the skin itself locally, but of parts beneath it, by looking at the skin immediately superjacent.

These are the chief observations which I have thought it necessary to make, in a general way, on the third branch of general pathology; called *semeiology*, or *symptomatology*. The fourth division of general pathology is *therapeia;* or the general treatment and prevention of diseases.

Now in regard to most diseases, nature has a tendency to get rid of them. It is ordained by Providence, to a great extent, that the injurious causes to which we are exposed should have but a temporary effect. Either the body has the power of resistance; or the causes exist temporarily, from being applied but temporarily to the body, or from being able to exert no more than a temporary influence. In this way it is that, generally speaking, although there are many exceptions, there is a tendency to shake off disease. This power of the body to shake off its morbid state, is called by writers the *vis medicatrix naturæ*, or *autocrateia*. For example, if any thing too acrid is taken into the mouth, a great flow of mucus and saliva is the consequence; which has a tendency to dilute the acrid matter and wash it away. So with respect to acrid matters taken into the stomach;—the stomach has a tendency to reject them; or if they be passed through the stomach into the intestines, the intestines are excited to action, and they are got rid of. This is the general tendency of the frame.

Again, many causes of disease are only temporary. A person is exposed to a great cause of disease;—the cause ceases; and of course, in many instances, the effect ceases likewise. It is not a necessary consequence, however, that the effect should cease because the cause is removed; but it very frequently happens thus. Again, there are

other causes which cannot produce an influence upon the body, however long they are applied, for more than a certain period. If you take the poison of small-pox, it produces a disease of only a certain duration. The patient may die, but if not, the disease can only last for a certain time; and when it has once occurred, the body, in the greater number of cases, becomes insusceptible of it again. These are the various means which nature has provided for getting rid of disease;—for getting rid of noxious causes before they produce actual disease, and for getting rid of diseases themselves.

Some have so great a confidence in nature, that they leave every disease to itself; and that sort of treatment is called *the medicine of expectation,—medecine expectante.* Such treatment does well in many cases;—it is the best in many cases, both medical and surgical; but it is totally inapplicable to a large number. No one, with a violent inflammation of the lungs, would consent to sit down quietly, in the hope that he would grow better day by day, when he knows that by the lance he may obtain immediate ease, and get rid of the complaint. When a person has taken poison into his stomach, of course he would be mad to wait for nature to effect a cure. He would send for the physician's medicine, or for the surgeon's stomach-pump.

The treatment of the diseases of the human body, is either preventive or curative. We either attempt to prevent disease from occurring, or we attempt to remove it; and when we cannot remove it, we attempt to palliate it. The treatment of the human body, in the way of preventing its becoming the subject of disease, is called *prophylactic;* that which attempts to cure disease, is called *curative;* and when we cannot attempt to cure a disease, still we may do a great deal in the way of palliation;—so that medicine is prophylactic, curative, and palliative. It is a great point very often to enable a person to live, (while he *must* live), incomfort and happiness; and if he must die, it is a great point to enable him to die easily. In many cases we have to adopt both curative and palliative treatment together;—that is to say, we aim at curing the disease; but we adopt palliative measures all the time, for the purpose of lessening any one symptom, or particular symptoms, which it is a desirable object to get rid of, or lessen, before the cure of the disease enables us to do so. For example, in the case of inflammation of the lungs, although we may attempt to cure the disease by bleeding, it is sometimes of the greatest importance to put an early stop to a violent cough by a narcotic.

We can hardly be said to treat disease, when no disease exists; but we must allow an extended use of terms. Whether our means, then, are to *prevent* diseases,—prophylactic; or whether they are to *cure* them,—curative; or whether they are to *palliate* them,—palliative; they may be of two kinds;—*rational* and *empirical.* In the treatment of many diseases, as well as in their prevention, we act *rationally;*—we proceed upon general principles, and the whole treatment is in the highest degree philosophical. We make an accurate diagnosis, in the first instance; we then see what is the wrong

state of the system, and we employ such means as are evidently calculated to remove that state. But in certain diseases, and in certain varieties of disease, we are obliged to act *empirically;*—to act in a certain way, without knowing why we are likely to be successful.

Now this empirical mode of practice is of two kinds. Sometimes we have a specific remedy for a disease, without knowing why; and, in other cases, it is impossible to know the exact variety and character of the disease; and we fire a shot at random that can do no harm, but which may do good. The treatment of inflammation is in the highest degree rational; the treatment of various spasms is the same; and the treatment of continued fever, too, I must think altogether rational. The treatment, however, of ague, of itch, and of syphilis, is empirical; for it is impossible to know why a few grains of sulphate of quinine cure ague; why a few grains of sulphur will cure the itch; and why syphilis will cease sooner if you exhibit mercury, than if you do not. No one would *à priori* imagine, that any of these remedies could have such a peculiar property. There is nothing in the nature of the disease, or in the nature of the remedy, that would lead us to any such conclusions. We are also frequently obliged to be empirical, where we cannot ascertain the proximate cause of a disease. For instance, epilepsy arises, in cases innumerable, from an unknown cause situated in the head, or in distant parts. If we can ascertain that it arises from irritation, our treatment is rational;—we remove the cause. If we can ascertain that it arises from an inflammatory state of the system, our treatment is rational;—we remove the cause. But sometimes we cannot conceive that it arises from either of these sources; and then we use certain remedies that are known occasionally to do good; not that they are a specific against epilepsy,—as bark is against ague, or sulphur against itch;—but because they continually do good in the disease. They are not specifics; for they will often not cure one case out of many; and in many cases they are totally inapplicable; but still they frequently do cure the affection. I allude to copper, zinc, nitrate of silver, &c.

The mode of treatment which is pointed out from the circumstances of the case, is called the *indication*; and things which the nature of the case forbid us to do, are called *contra-indications.* To discover the indications which are necessary in the treatment of a disease, we must make a careful diagnosis of the nature of the case; then we must make an equally careful diagnosis as to the variety of the particular disease; and then we ascertain the stage of the affection, the exact strength of the patient, and the incidental circumstances. For example, we ascertain whether the place in which he lives, at all accounts for his disease; or whether the season of the year is such as is likely to have affected him. We must likewise observe whether there is any peculiar "constitution" of the period. Sydenham used to mention the character of epidemics as "the constitution of the year." Continued fever has sometimes been attended by so much tendency to debility, that evacuations were in the highest degree improper; and the patients did much better when they were allowed to take mere simple food, with scarcely any other treatment. This

has been the case during several months lately.* If the patient was left alone, or treated with what in truth was no treatment at all, he has in most cases done well. If the least evacuation was attempted, the disposition of the disease was to great prostration of strength and rapid sinking. It is necessary, therefore, to know the constitution of the period; and, but for this, I certainly should have destroyed many patients by treating them as I had been accustomed to do. However, I was warned by the experience of others, and by careful observation of what was going on.

It is necessary also to know what are the contra-indications;—whether there is any peculiarity in the patient. Some patients will not bear a remedy which is very appropriate to a disease. The disease may appear evidently to point out the necessity of a certain mode of treatment; but a peculiarity in the individual may render it exceedingly improper. This peculiarity sometimes relates not only to particular medicines, but to particular articles of food; and sometimes there may be some other disease present, which forbids the employment of a particular remedy. For example, if a person have a hernia which cannot be well kept up, and you wish to give an emetic, you would try to do without it, lest you should force the intestines down too violently. You see, therefore, that you are not to be satisfied when you have given a name to a disease. It is a great point to make a good general diagnosis; but that will not do alone. You must make a more accurate diagnosis still; you must ascertain its minute variety, individual peculiarities, and all the other circumstances that I have just now mentioned.

In regard to the things indicated, they are divided generally into two classes,—*regimen* and *pharmaceutical* means;—the former consisting of injunctions with regard to the temperature of the place,—to food, exercise, rest, and every thing of that description; and the latter respecting drugs. In prescribing medicines, it is necessary to recollect that, however excellent they may be, they are frequently rendered abortive by our want of attention to something else. There can be no doubt of the use of a large number of remedies,—both drugs of the Pharmacopœia, and other remedial means; but I have seen them fail, not through any fault in themselves, but through something else that was not attended to when they were employed. For example,—if mercury be given to arrest a violent acute inflammation, you cannot expect it to have that effect, if you neglect to bleed the patient; and even though, in addition to giving mercury, you do bleed, you cannot expect to succeed unless you are particular with regard to diet. So, in diseases of the skin, there are many remedies which have a particular operation which we cannot explain. They are not exactly specifics; but they do great good. Yet the skin, in the midst of these diseases, may be in an inflammatory state, and if you do not bleed and enjoin low diet you cannot remove the affection. As no one symptom can be depended upon, so it is with remedies; and when you prescribe a remedy for a patient, you must take into consideration all the other points on which it is necessary to give directions.

* October, 1831.

Notwithstanding, however, the most scrupulous attention to all the circumstances I have just enumerated, you will often be disappointed in the cure of a disease; but are not to be dismayed on that account. Our profession is capable of effecting the greatest good, chiefly in the way of preventing disease. By improvements with respect to cleanliness, with respect to air, with respect to food, and every thing else of that description, diseases which formerly prevailed to a great extent are now scarcely known; and we can do absolute good, to a large amount, in curing disease when it has occurred. A great many diseases are inflammatory; and over inflammation, by means of bleeding and other remedies, we have the greatest power. When we cannot eradicate a disease, still it is of great importance, and it is also a great blessing, to be able to mitigate pain; and it is to be remembered, that although we fail in the cure of many affections, yet, if we make the attempt, by degrees more knowledge will be attained; and those who follow us, will be able to do what we cannot.

I have now made the chief prefatory remarks which I deemed necessary, before entering upon the consideration of particular diseases,—upon *special pathology*. I have confined myself to an exceedingly superficial view of the subject of *general pathology;* and to the explanation of a few of those terms, which I shall most frequently have occasion to employ.

More minute remarks I shall reserve for various parts of the course. For example, when I come to speak of the causes of inflammation, I shall particularly dwell upon the *modus operandi* of various changes and degrees of temperature in producing disease; and when I come to speak of diseases supposed to be contagious, I shall enter upon the subject of contagion. I think it much better to treat these matters in this way, than to treat them in the abstract before entering upon particular diseases; for by this means they will not only be better understood, but we shall be relieved from the tediousness of dwelling long, at a time, upon general subjects.

Now in the first instance I mentioned that one part of general nosology, or one part of general pathology,—one branch of that part of pathology which is called *nosology*, is the *arrangement* of diseases. One branch, if I may so speak, of general nosology, is *methodical nosology*. You will frequently hear the arrangement of diseases spoken of simply as *nosology;* but that is incorrect. The arrangement of diseases is not simply nosology, but *methodical* nosology;—*nosologia methodica*.

It was long before an attempt was made to arrange diseases. I believe Felix Platerus was the first who struck out the idea of arranging diseases methodically; he was followed by Baglivi, an Italian physician, and Sydenham. However, it was a French physician who first actually arranged them systematically;—Sauvages, who published his work in 1762. It was in that year that the first methodical nosology was presented to the world. After him came the celebrated Linnæus, who arranged every object in nature. He published his nosology in Sweden, in 1763. Another physician, Vogel, published one in 1764. No sooner was the thought put in practice,

than every body went to work. The arrangement of Cullen was published in 1769; another was published by Dr. Macbride, and one by Sogar, at Vienna, in 1771,—so short a time elapsed; then one by an author named Vitenus; one by Dr. Thomas Young, the celebrated English philosopher; and one still more recently by Dr. Good. There have been others, but these are the chief.

Now, however useful it may be to arrange diseases slightly, for the purpose of memory, and for the purpose of general views, I think it must be confessed, that all these various *methodical nosologies* only perplex and encumber the mind. I studied the arrangement of Dr. Cullen formerly very minutely, and had great part of him at my fingers' ends; but I confess that my knowledge of it now is but of a very superficial kind, and that it was never of any use to me. The arrangements of Drs. Young and Good appear to me just as useless; and I would not, if I were to advise you honestly,—and I hope I always shall do so,—I would not advise you to plague yourselves about nosological arrangements. My own experience tells me that it is a much greater plague to recollect the arrangement, and all the hard words, than to recollect the things for which the arrangement is made. I never found it of the slightest use; any more than the barbarous jargon of the *Propria quæ maribus*, and *Quæ genus*, of the Latin grammar.

On the inconsistencies and defects of these various arrangements, I will not dwell; for if you turn to any methodical nosology, you will find them in sufficient abundance. You find exceptions made to the plan, which the author has laid down in his arrangement; and you find the most gross absurdities. If you turn, for example, to Cullen's arrangement (which is one of the best) you will find that a large number of diseases which are daily occurring, have no place in his nosology. Such was his arrangement, that there was not only no place for many most important diseases, but he arranges itch and fracture together. In speaking thus of Dr. Cullen, allow me to say, that although I think little of his arrangement, there can be no doubt that it was far better than that of any of his predecessors; and I must be allowed to pay a tribute of respect to his memory, as one of the most sagacious and best of men, that ever joined themselves to our profession. I should be very sorry to endeavour to captivate your minds, by attempting to lower any one in your estimation. Nothing can be more contemptible; and as regards Dr. Cullen, nothing could be more unjust. You find in his work the utmost candour, and the soundest information; and although he indulged in hypotheses to which some Scotch physicians have been prone, yet independently of that, his descriptions are elegant and simple, and you will find his definitions admirable. It is to be remembered that his work on the Practice of Medicine, was not considered by him a perfect work; and he modestly called it "First Lines,"—a mere outline; but such as they are you will find them, according to the information of that day, exceedingly useful; and it is on account of the excellency of the original work, that I should perhaps prefer recommending to your study an edition of Cullen, with notes, to the work of any other individual. I think the advantage of

having Cullen's work, with notes, although it should not contain more information, is, that you have the work itself of Dr. Cullen; which was not surpassed in his day, and has not since been surpassed, as far as respects the knowledge of that period. I think you cannot do better than study the edition by Dr. Gregory.* There are many other excellent works;—Dr. Gregory's,† Dr. Mackintosh's,‡ Dr. Good's;§—any one of which is worth possessing, and would form a good basis for study; but I think altogether you will find Cullen's, with notes, the most profitable to you as *students.*

The most natural mode, in my opinion, in which we can attempt to arrange diseases in our mind,—that which serves best for the purposes of recollection (for an arrangement is certainly useful; although I am not an advocate for a *methodical* one, so called) is a two-fold arrangement; first, as to the nature of affections in general,—whether they are inflammatory, structural, functional, mechanical, or parisitical (for whenever we see a case, we immediately consider what is the kind of affection); and then, secondly, as to the part in which the affection occurs. This is the arrangement which I shall follow. I shall first consider general diseases,—such as affect every or most parts of the body;—inflammation, scrofula, and various other organic diseases; and afterwards, having considered all the affections which may attack any part of the body, I shall proceed to consider those affections and all others, whether functional, mechanical, or parasitical, as they attack the body from the head downwards—*a capite ad calcem.* I think we all make two inquiries in considering any case;—the one is the nature of the disease, and the other is the situtaion of it. This is the utmost assistance, I think, that the memory can have from arrangement; and this is the plan which is continually followed by *practical* writers. They write on particular diseases, whatever they may be—inflammation, cancer, &c.; and of the whole diseases of particular organs, and sometimes of particular regions. You have one writer publishing a work especially on diseases of the urinary organs; another entirely on diseases of the nervous system; another, entirely on diseases of the head; another, on diseases of the chest; and this course we naturally fall into. But, independently of that, we must make observations upon the general affections to which all parts of the body are liable. I am quite satisfied that this sort of arrangement,—by which we first consider general affections, which may attack any one part of the body; and then consider the affection as seated in this or that part,—will afford us all the assistance that arrangement can give; and I hope you will never plague yourselves farther with methodical nosology. ||

* "First Lines of the Practice of Physic;" by William Cullen, M.D.; with Notes, by Dr. W. Cullen, and Dr. J. C. Gregory; 2 vols. 8vo.

† "Elements of the Theory and Practice of Medicine;" by George Gregory, M.D. Fourth Edition, 8vo.

‡ "Elements of Pathology, and the Practice of Physic;" by J. Mackintosh, M.D.

§ "The Study of Medicine," by John Mason Good, M.D.; edited (with numerous additions) by Samuel Cooper, Professor of Surgery in University College.

|| See Appendix, No. I.

INFLAMMATION.

The first disease of which I will speak, is the most general of all affections. It is one which attacks almost every part of the body,—at least all vascular parts; and which is the most frequent of all diseases;—*Inflammation.*

In the first place, this is the most general of all diseases; it will attack any part of the body that is vascular. In the second place, it is one of the most frequent affections. It is a disease which scarcely any person escapes; it is a disease which is seen every day. It occurs simply by itself; and it is the concomitant of a variety of other diseases. Many diseases are *always* inflammatory, though they are not simple inflammation;—though there is something more than inflammation, yet inflammation is united with them; and many other diseases are *frequently* inflammatory, but not *always.* Besides, inflammation is continually occurring as a means of benefit to the body. It is not only a morbid process; but a process frequently set up by nature for the purpose of restoration, relief, and prevention. It is a disease, too, which proceeds from a vast number of causes;—causes to the action of which we are continually exposed, whether we will or not.

Again, it is one of the most dangerous diseases when it affects certain parts, and any part when it proceeds to a certain extent; and it is always liable to be carried to this dangerous point. However slight an inflammation may be, it is always liable to become aggravated to a dangerous point; and it continually does actually attack the most important organs; and hence we may be justified in saying, that the consideration of inflammation is more important, than that of any other affection of the body.

When it occurs, not as a disease, but for the purpose of restoration,—for the purpose of health, if I may so speak,—the circulation of the part becomes increased; the quantity of blood becomes augmented; and more nourishment is afforded than before. If a part be destroyed, or divided, a degree of inflammation is set up, and fresh matters are deposited, so that the part is more or less renovated. When a bone is fractured, a certain degree of inflammation occurs, for the purpose of pouring forth a fluid, which afterwards becomes solid, and produces union.

In the next place, inflammation is frequently employed by nature, to prevent the escape of matters into parts where violent inflammation would be produced; and is set up by nature, to prevent its own occurrence in another spot. For instance, when an ulcer takes place in the stomach, or in the intestines, if it proceed unchecked, the contents of the stomach or the intestines, are poured forth into the cavity of the peritoneum, and a violent inflammation is set up;—an inflammation, in the greater number of cases, fatal. Nature, however, very frequently sets up a little inflammation outside the organ, exactly at the part corresponding to the ulceration within, by which means it is glued to the surrounding parts. Fibrin is

poured forth; the fibrin becomes vascular; the parts become still more firmly glued; and then the disease of the stomach or the intestines, cannot ulcerate through into the peritoneum. Thus, a slight inflammation is set up in one spot, to prevent an inflammation which would be fatal to the patient. You will see the stomach sometimes attached to the peritoneum, and sometimes to the liver.

Then, again, nature frequently employs inflammation to give an exit to something which is injurious to the body. When a biliary calculus is impacted in the ducts, and is too large to escape, it sometimes happens that these ducts become attached, by inflammation, to the intestines. The inflammation, after it has excited adhesion, proceeds, perhaps, to ulceration; and when the latter occurrence takes place, the calculus escapes through the opening into the intestines. The inflammation, in the first place, is set up to prevent the communication which would afterwards take place into the peritoneum, so that the bile and the calculus shall not escape into it; and when all these parts are firmly glued together, and the danger prevented, then, at the particular spot, inflammation goes on to ulceration. Ulceration takes place into the intestines; and in that way an exit is given to the foreign body.

When a part of the body mortifies, whether through inflammation or not,—when a part has become dead, and useless to the body, and even injurious to it from its presence,—then inflammation is employed for the purpose of separating it. At the boundary of the living part, inflammation is set up; a red line appears at the extremity of the healthy part, where the dead part begins; and that red line is a line of inflammation; which inflammation proceeds to ulceration. A furrow of ulceration takes place; and goes down till the part is ulcerated through, and the dead part falls off,—having been separated by the ulceration of the living disease.

You see, therefore, that inflammation, although a most fatal disease in many cases,—although conjoined with the most frequent and violent diseases,—is sometimes a most salutary process;—is sometimes employed by nature to próduce an union of parts; sometimes to prevent the great mischief which would arise from an effusion of fluids into parts where they ought not to go; and sometimes for the purpose of giving exit to foreign bodies, or of separating dead parts from the living.

The general definition of inflammation is, "redness, swelling, heat, and pain;" that is to say, *morbid* heat,—*morbid* redness. Swelling and pain require no definition, but redness is healthy in some parts; and therefore we must understand *morbid* redness;—and with respect to heat, *morbid* temperature. These are the four chief symptoms of inflammation,—those which make the definition in general,—in the words of Celsus,—"*rubor et tumor, cum calore et dolore.*"

These are the general constituents of inflammation; and if they do not all exist in all cases, still usually the greater number are present. Sometimes one is absent, sometimes another; but the *redness*

is never absent. The redness is certainly indispensable to our idea of inflammation; and it will sometimes exist without swelling, without heat, and without pain; without any of these individually being induced,—without any two of them; and now and then the redness will exist alone, without any of the three. Whether the state should then be called inflammation or not, may give rise to a difference of opinion. But frequently you have inflammation without any perceptible swelling. You must conceive the part to be a little increased in size,—because there is more blood than natural; but without a sufficient enlargement to justify you in using the word "*swelling*;" —without much increase of heat, and sometimes certainly without pain; and it is to be remembered that both the increase of temperature and the redness, (by which we understand a *morbid degree* of them), may arise from other circumstances than inflammation; as may also the swelling and pain.

Still, although redness is indispensable to inflammation, it is not every redness that we have a right to call inflammation. A certain degree of it is necessary to the idea of inflammation. How much cannot be specified; but, like sensations in general, it must be experienced to be learned. The requisite intensity will vary in different parts, according to their natural colour. A blush, or momentary rosiness, is not considered an inflammation, and every part is liable to this momentarily in health. As regards the cheeks, a degree of redness there would not be considered inflammation, which we should be fully justified in calling so, if it affected other parts of the body. The most intense redness, if it last only for a moment, we should not call *inflammation*. In the cheeks it must be,—supposing the person has a natural colour,—a very deep red indeed, and more or less permanent,—at least not a transient redness, though intense, to enable us to say that the cheeks are inflamed.

Again, the same degree of redness,—the same intensity of it, would not be considered inflammation if alone, which would be considered so, if there were also pain and morbid sensibility. If we saw in the cheeks a great redness, we should not hesitate to call it inflammation, if we found the part were morbidly sensible; or if the patient complained of its smarting, and being painful independently of pressure. Although the redness might be less intense, and might not continue so long as alone to justify us in calling it inflammation, yet provided it were in a part which is not naturally red, like the cheeks,—not liable like them to occasional flushing and rosiness, a much less degree of it, and a much shorter continuance, might give us the idea of inflammation. You see how many things are to be taken into the account. A knowledge of these things cannot be gained at once; and many circumstances must be called in to aid us in our judgment. When persons are speaking of redness in connexion with inflammation, instead of the mere expression *redness*, we ought to say *morbid*, or, perhaps, *preternatural* redness; because what is morbid redness in one part, is not morbid redness in another; —redness preternatural to the part affected.

Now redness is not only of various degrees of intensity in inflammation, but of various hues;—being sometimes of a bright scarlet, sometimes rather purple, and of all intermediate shades. Besides varieties of hues in redness, the redness may be distinctly circumscribed in patches; or it may be insensibly lost in the natural colour of the surrounding parts, so that we cannot exactly say where it ends.

We will now proceed to the consideration of the other symptoms; and first of *heat*. It is right to say, that for the same reason which makes one adopt the epithet "*preternatural*" or "*morbid*," in regard to redness, we should likewise affix the same epithet to heat; because the body, in this country at least, and in most others, is hotter than the surrounding temperature; and therefore it is always hot. A preternatural heat, if not very great, is not of necessity inflammatory; and if it be very great, and yet last but for a short time, even then it is not inflammatory. A certain intensity, and a certain duration, are necessary to constitute inflammation in the case of heat, as well as in the case of redness. The greatest intensity of heat, if transient, would not be considered inflammation. The burning heat upon the cheeks, the palms of the hands, and the soles of the feet, in hectic, is never considered inflammation, even though it is combined with preternatural redness. The most intense heat, and also the most continued, is not of necessity inflammation, unless it be united with a pretty permanent preternatural redness. The whole body may be of a burning heat for weeks, as hot as an inflamed part; and yet the skin is not said to be inflamed. The example of hectic shows that even a combination of heat with intense redness, is not sufficient to give the idea of inflammation; for in these intense spots in hectic there is no pain, nor are the parts most affected tender on pressure. Besides that, I need not say that morbid temperature only comes on for a few hours in the day; and is a mere concomitant in hectic from another disease. In addition to this there is no swelling in this affection; and therefore we have still greater reason for saying, that it is not at all inflammatory.

With regard to heat, the temperature of the affected part appears much higher to the patient, than it really is; which arises from the parts being in a state of morbid sensibility. In palsy it is not very uncommon, when there is no increase of temperature at all,—no inflammation,—for the patient to feel every thing hot; so that if he sit on anything without his clothes, it strikes hot to him; or if he put his hand on any substance, whatever it may be, it appears as if it were heated. This is a peculiar state of the system, and not inflammation. There is in inflammation a general morbid sensibility of the part; and therefore the degree of heat which actually occurs, produces greater effects than it would in any other part of the body. But although, from the morbid sensibility of the part, the increase of heat appears greater to the patient than it really is, there can be no doubt that in inflammation the temperature is raised. When the notrils are inflamed, or the bronchial membrane, or the throat, the

air that we expire is so heated in passing over the parts, that, as it comes out at the nostrils and lips, it is felt to be burning. If you apply your hand, which is in a state of perfect health, to the inflamed part, you feel that it is hotter than usual; and if you make use of a thermometer, you ascertain the point to a nicety. You continually find the parts inflamed hotter, by many degrees, than other parts of the body. It is not uncommon for them to be at 107°. John Hunter made experiments, to show that the temperature of inflamed parts was but little augmented;—at least not higher, he said, nor even so high, as that of the blood at the heart and in the chest; that if the parts had naturally a lower temperature than the centre of circulation,—as for instance, the hands and the feet,—and they became inflamed, their temperature never rose so high as that of the centre of circulation. The general temperature is said to be 98°; but it varies in different parts. The farther you proceed from the heart, the lower it becomes; because there is less circulation there, and the parts are more exposed to the temperature of the surrounding atmosphere. There is a great mass of substance at the trunk; there is less on the arms; still less at the extremities of the fingers, at the nose, and the ears; and there is more exposure.

Now John Hunter produced inflammation very cruelly in the thorax, in the peritoneum, in the rectum, and in the vagina; and he found the heat but one degree and a half higher than before the inflammation; and he frequently found it exactly the same. He says that the temperature of the vagina, at the utmost increased to 101½°; but he found the temperature of the tunica vaginalis only 92° in health; whereas, when inflammation was produced in it, it rose to 98¾°;—98° being about the natural temperature of the body. It is to be remembered, however, that the scrotum is a part very much exposed to the surrounding air,—a depending part; and is therefore as much exposed to the surrounding atmosphere, as the hands, feet, ears, or nose; and he infers that the heat is never raised above the natural standard at the centre of circulation. If the natural temperature of the tunica vaginalis be 92°, certainly the increase to 98¾° is very considerable. He says that he once found the abdominal fluid to be as high 104°; and he says that if inflammation attack any part with a temperature of 98, the heat may proceed beyond that of a healthy person. Now, however correct these experiments may be, you have only in the case of erysipelas to take a thermometer, lay it upon the inflamed part, and cover it up; and you will then see the temperature, although it be erysipelas of the *leg*, often raised to 104, 105, 106, or 107 degrees.

That the temperature of the body may be increased very considerably, in various circumstances, is shewn by the following facts. Sir Everard Home observed the oviducts of a frog when about to spawn, and when a great local activity of circulation was going on, to be two degrees higher than the temperature of the heart. Now there was no inflammation here; but merely a great activity of circulation approaching to inflammation, such as occurs

in the generative process; and the result was as I have stated. If then a mere natural process, short of inflammation, will raise the heat above that of the centre of circulation, you may well suppose what inflammation will do. Even in vegetables, when a certain process is going on with great activity, a very considerable increase of temperature takes place. When the *arum cordifolium*, and the *arum maculatum*, are about to burst, the temperature, by placing a considerable number around a thermometer, has been such as to raise it very considerably. Twelve were placed around a thermometer; and so high a degree of heat was developed in the physiological process of bursting, that the instrument was raised from a temperature of 70° to that of 143°. Even in fever, by placing the thermometer under the tongue, you find the temperature raised many degrees; and the same occurrence takes place in acute rheumatism. In one case of phlegmasia dolens, on placing the thermometer on the thigh, and covering it with the hand or bed-clothes, I found it rise to the same degree of heat that is frequently observed in fever, and in acute rheumatism;—namely, to 107 degrees. Indeed one gentleman says that, having introduced a thermometer into the vagina, during labour, he has observed the temperature of the uterus to be 120 degrees. During the violence of the spasm in tetanus, the temperature is frequently as high as 107 degrees. There can be no doubt, therefore, that inflammation is frequently attended by a great increase of temperature. I have seen it myself in various inflammations of the surface. This, however, is not peculiar to inflammation; for, as I have stated, it occurs in fever and rheumatism; where the thermometer has not been applied to the rheumatic parts, but put under the tongue, and in various parts of the body; and it has been observed likewise in many affections of the system.

But as an increased heat may exist without any inflammation, so inflammation—that is to say, redness and swelling, of an undoubted inflammatory character, as proved by the terminations—may exist without any preternatural heat. You will sometimes have inflammation, or what I certainly think we are justified in calling so,—that is to say, preternatural redness and swelling, going on to suppuration,—without any increase of heat: and this state of the parts has been called *passive* inflammation. Some object to the term, and say it does not deserve the name of inflammation;—that it is mere congestion of blood. But it will go on to suppuration; and therefore I think we are justified in calling it inflammation, although there is no increase of heat. It is right, however, to tell you that some actually object to calling such a state *inflammation;* and they limit the term "*inflammation*" to an active state, in which there is pain, and all those symptoms which I mentioned. To avoid any quibbling, Andral calls any state in which there is a morbid collection of blood, *hyperemy*,—excessive quantity of blood in a part; when it is actively inflamed, *active hyperemy;* and when a passive state occurs, he terms it *passive hyperemy*. Thus he gets rid of the difficulty altogether, by no longer using the word inflammation; but

by using a word signifying congestion of blood, and applying one epithet or another to it.

If we consider the third of the symptoms,—*swelling*, we shall find that it also may exist without any inflammation. Swelling, although frequently a symptom of inflammation,—more frequently than not,—may of course exist (just like an increase of temperature, or an increase of redness) without inflammation. Any thing, almost, will produce a swelling. The mere displacement of a part, the dislocation of a bone, hernia, the mere effusion of hæmorrhage, or a mere collection of water or any morbid growths, whatever their character, or the presence of air within the body, will all produce swelling. Swelling, then, may be produced by many causes besides inflammation. For a swelling to be considered inflammatory, it must be united with pain or a preternatural redness; and even then it may be chiefly dependent on other causes. For instance, in dislocation you may have inflammation of the ligaments and integuments, producing pain; but the swelling arises chiefly from the displaced bone. Again, it is to be remembered that inflammation may sometimes exist without swelling; as is occasionally noticed in ophthalmia. In ophthalmia, the turgescence often gives rise to no perceptible swelling. Sometimes there is a little swelling; but frequently this affection, and many superficial inflammations of the skin, are not attended by any swelling. Sometimes you will actually see a part inflamed, in which there is scarcely any pain, and no increase of temperature, but excessive redness and excessive swelling. The congestion is extreme; and gangrene, in such a case, is very likely to take place.

You see, therefore, that not only the symptoms will arise from various other causes than inflammation; but that they are frequently out of proportion, when they do occur, to each other. Sometimes a little inflammation is attended by very violent pain; and sometimes a little inflammation,—a little increase of heat, is attended by the most violent swelling. There is no necessary proportion between any of these symptoms.

Then if you take the last of the marks of inflammation,—*pain*, we shall find that it will arise from many other causes beside inflammation. Pain will arise from a mere spasm. Nothing is more painful, for example, than cramp in the legs. Pain arises frequently from scirrhus, or cancer: some call this "chronic inflammation;" but certainly there is something more than that. Pain, too, is frequently neuralgic; being dependent on a violent affection of the nerves, in which no inflammation can be detected during life, and no effect of inflammation discovered after death. Pain continually arises from inflammation, but it continually arises also from the other sources just pointed out; and sometimes it is absent in inflammation. You will see a part violently red, and violently swollen, without any pain at all; and sometimes nothing is worse than this; for the part may fall into gangrene.

Just as there may be varieties of heat, and various hues of redness, so there may be varieties of pain. The pain is sometimes ten-

sive. If the part be one that will not stretch, then the pain is of a tense character; and the part feels as if it would burst. If it be inflammation inclined to suppurate, the pain is of a throbbing character. If it be inflammation of the skin, the pain is frequently of a smarting or of a tingling character. If it be inflammation of a mucous membrane, you frequently have it characterized by a burning and pricking pain. If it be inflammation of a serous membrane, a stabbing sensation will often be experienced, as though a knife were being plunged into the part. There are, therefore, great varieties of pain; just as there are various hues of redness.

The pain of inflammation is generally increased by pressure, —at least by *sudden* pressure; whereas pain arising from spasm is generally relieved by pressure. You have this very strikingly shown in colic and in enteritis. In the latter, the pain, of course, arises from inflammation; and if you press the abdomen, even with the point of one finger, the patient experiences exquisite pain; whereas, in the former, which is a mere spasm of the intestines, the more you press the more is the patient relieved; so that I have found a patient able to bear the pressure of both hands, with my feet almost raised from the ground, standing on tiptoe; and the more I pressed the greater was the relief. But the two may be connected; and then you have a certain portion of relief, and a certain portion of aggravation.

However, it is necessary to say, that although the pain of inflammation is increased by pressure, it is rather by this being *sudden*, than when it is gradually increased; for frequently, if you press an inflamed part very slightly, and gradually augment the amount, very considerable pressure can be borne, provided you press the *whole* part. If you press only one spot, even slowly, you are sure to give pain; but if you can embrace the whole part, and press it all gradually, so as to empty it of its blood, you will frequently produce ease. This is shown every day in the case of inflammation at the bottom of the foot. If you have a blister upon the sole of the foot, or at the ball of the great toe, and you rest gradually upon the part, the pain becomes mitigated, till at last it seems to be almost entirely removed: but the moment you take off the pressure and raise the foot from the ground, you feel the part begin to throb, with violent pain. It appears, therefore, that if an inflamed part be pressed suddenly, it is sure to have its pain increased. If it be pressed even gradually, but only partially, you generally produce the same effect; because, if you press only one part, the other becomes more gorged with blood; but if you can press the whole together, so as gradually to empty all the vessels, or diminish their contents, then pressure can be borne; and, more than that, it frequently gives relief.

Hence pressure has been recommended as a means of cure, by certain writers, in some inflammatory diseases. Pressure has been recommended for the cure of gout and rheumatism, by Dr. Balfour, of Edinburgh; and a French surgeon (Velpeau) has recommended it in erysipelas. But it frequently happens that, although relief may

be given in some cases, considerable aggravation is excited in others. It is necessary that the part should be all compressed,—that the pressure should be equable; for any deviation in this respect, so that a part of the vessels were allowed to become the more distended, would increase the mischief. Very frequently, too, inflammation does not depend altogether upon local causes. There is a tendency to it in the constitution; and although you impede the circulation of the part, you do not stop the impetus of blood running to it. The large arteries around, are found to throb violently against the part compressed; and pressure frequently cannot be borne at all. On all these accounts, it is exceedingly difficult to cure inflammation by pressure. As a general rule, however, we may say that the pain of spasm is diminished by pressure, and the pain of inflammation increased by it; and this criterion is continually resorted to, as a means of diagnosis;—as a means of distinguishing whether pain is inflammatory or spasmodic.

Pain is, generally speaking, greater in proportion to the tension of the part attacked. The less a part will yield, the greater generally is the pain. Hence much inflammation of the theca of a tendon, is generally attended with great agony; and, from a similar cause, when matter is formed, if it cannot escape, (owing to the part not yielding at all), the pain is most agonizing; whereas, by relieving the tension in making an incision, so as to allow the escape of even the smallest quantity of matter, and the yielding of the part, the pain instantly disappears; and more than that, the great irritation of the system, which, perhaps, amounted to a violent delirium, also vanishes. All these things frequently cease, as if it were by magic, when an incision is made. Hence, too, the great use of incisions in certain inflammations of the skin and the cellular membrane. In what is called *phlegmonous erysipelas*, the cellular membrane becomes excessively gorged with fluids. The skin is distended, and the greatest agony is felt; but a few incisions will put a stop to all this. I presume it is for the same reason, that, in inflammation of a serous membrane, you have far more violent pain than in inflammation of a mucous membrane. These serous membranes in general are tense, and give the most violent pain when they are inflamed; whereas the mucous membranes are all of a yielding character; and inflammation of them is consequently never attended by a violent stabbing pain. You know that serous membranes are generally spread out pretty tightly; —at least a considerable portion of them; and therefore you generally have a violent stabbing pain, when they are inflamed. But sometimes this is not the case; and then the less degree of pain may arise from the affection being seated in a portion that will yield.

But pain, according to its situation in various parts, may be sharp, dull, smarting, or burning. Sometimes it is a mere soreness;—no pain is felt unless the part is irritated mechanically, or some particular stimuli are applied. Parts which have little or no sensibility in health, acquire sensibility under inflammation; and frequently very *intense* sensibility. Many parts which may be cut in health,

without the individual, whether man or brute, experiencing any sensation, cannot, when inflamed, bear the slightest motion or the slightest pressure. If, therefore, parts which show no sensibility in health, become very sensible in inflammation, you may suppose that parts which are naturally sensible in health, may become very painful when in a state of inflammation. However, the degree of pain will not be commensurate with the degree of original sensibility; because it depends so much likewise upon the tension, or upon the yielding character of the part. If it so happen that a part which has no sensibility, or but little, but which is nevertheless an unyielding part, becomes inflamed, the pain will be dreadful;—more dreadful than it would be in a part which naturally has sensibility, and yet is of a yielding character.

Inflammation is generally known by pain, increased on pressure; by feverishness; and by a disturbance of the function of the part. When we see a person labouring under disordered function, under feverishness,—pyrexia,—and under pain, which pain is increased by pressure, although we cannot see the part, we have no doubt that it is inflamed,—that the proximate cause of these symptoms is inflammation. Sometimes there is no pain experienced, but simply disturbance of function and feverishness; and when that is the case, we are not sure that there is an internal inflammation. When a part can be seen, the symptoms which I have already mentioned, few or more of them, will be sufficient to characterize the complaint; but we are certain also of the existence of inflammation, even when the part is invisible,—when we cannot ascertain whether it is red, hot, or swollen, or not; but where there is pain increased on pressure, the function of the part disturbed, and the patient labouring under what is called "feverishness," or "pyrexia."

These are the four symptoms of inflammation during life; but they may have existed at that period, and yet none of them remain after death. The pain and the heat, of course, must disappear; but the redness and swelling you might expect to remain. When, however, we have seen a part inflamed during life, or such symptoms have been present as to leave no doubt of the existence of inflammation, in both cases you may find, on examination after death, no marks of inflammation at all. Yet the absence of these marks does not, in any way, invalidate the opinion which you formed during life; for it will sometimes happen that, after death, every mark of inflammation will disappear. You may sometimes, in inflammation of the surface of the body, or of the eyes, (visible enough during life, and of which the patient died), find both parts pale after death. The skin, perhaps, will be slightly swelled; but the swelling will be greatly diminished, and the redness entirely gone. This is a certain fact respecting inflammation in general; because it is observed with regard to external inflammation. After apoplexy you will frequently find nothing. Although, during life, the head appears to be bursting from an accumulation of blood; and the patient has died of the complaint; yet you will frequently find, after death, no morbid appear-

ances. All the vessels, when the temperature of the body cools, recover themselves; or the blood, in some way or other, goes to other parts; but this occurrence does not always take place. You will sometimes find that where there was no doubt, from the symptoms, that internal inflammation existed, the marks of the complaint disappear after death. Sometimes they do; but it is by no means general.

On the other hand, you must recollect that it is not every preternatural redness you discover after death, that is inflammatory. You may find an intense redness of the internal parts, in the bodies of patients, whom during life you did not suspect to be labouring under inflammation; and you are not on that account *alone* to suppose that they did; for just as the redness of inflammation will frequently disappear after death, (either in a great degree or altogether), so after death, without any previous inflammation, you may have morbid redness of the parts. If the patient have died with great difficulty of breathing, so that a large accumulation of blood has taken place in the lungs, you may find the liver gorged with blood; and you may find the mucous membrane of the stomach and intestines exceedingly red;—not from inflammation; but simply because the blood was obstructed in the lungs, or in the heart, and consequently congestion took place. In a case of great debility, a continuance of the patient in one posture during the latter period of his existence, will cause such an accumulation of blood as, after death, to give rise to great redness; and these appearances are always greater, in proportion to the number of capillary vessels in the part to which the blood inclines by its gravitation. The blood will not merely accumulate in the vessels in this way; but it will transude from them, so as to dye the surrounding parts perfectly red, and prevent your distinguishing the appearance from inflammation. This is particularly the case in hot climates and in hot weather. Dr. Davy, the brother of Sir Humphry, says (in a paper published in the tenth volume of the "Medico-Chirurgical Transactions"), that he has found it, in hot countries, often impossible to distinguish the redness of inflammation, from the redness of transudation, or from the redness from a piece of membrane being merely steeped in blood; and from all his observations and experiments he draws the conclusion, that if, in a hot climate, a body be not opened within twenty-four hours after death, the surfaces become red; that the serum of the cavities likewise becomes bloody; and that the viscera becomes livid; so that no opinion can be formed as to what was the state of the parts during life. The reason is this;—the hotter the temperature, (within certain limits), the sooner does decomposition take place; and the more a part is decomposed, of course the more easily does transudation occur. The solids become more soft,—more spongy; and blood which comes in contact with them, easily pervades them,—oozes through them; and dyes them, and any of the liquids which the parts may happen to contain.

You notice, in dead bodies which have lain any time upon their

back, especially in hot weather, that the posterior parts all become livid, and filled with blood; while the anterior parts are pale. The body being usually placed on the back, if you open it and examine the lungs, you find their posterior part heavy,—filled with blood,—livid;—in fact exhibiting exactly the same appearance, as the anterior part does in violent bronchitis; and every one accustomed to make post-mortem examinations, allows for this occurrence. He never thinks of considering it a morbid appearance; it is simply the effect of the blood gravitating to the lowest parts. You will observe also, when bodies are at all decomposed, that read streaks appear along the surface, in the direction of the various veins. The blood accumulates in all the veins after death; and as the substance of the coats becomes more and more decomposed, it allows the blood contained within the veins to transude; and in that way the coats themselves become thoroughly dyed with blood, and the cellular membrane around the vessels becomes dyed likewise; you may trace the superficial veins in the dead body from this appearance. This is nothing more than a transudation of the blood, through a degree of decomposition having occurred.

The observations made by Dr. Davy, many years ago,—respecting the importance of examining bodies early in hot-weather, and shewing the importance of knowing that such appearances as are induced by inflammation, may take place merely from decomposition,—have been all lately confirmed by Andral; who, to make his observations the most striking, has examined the same part of the body at different periods. Early after death, he has found an organ pale; but if it were afterwards so placed as to favour the gravitation of the blood to a certain portion of it, that part of the organ, when subsequently examined in a few days,—decomposition having proceeded,—had become intensely red.

The blood will not only accumulate in the solids in this manner, and not only exude in sufficient quantity to dye any liquids that may be within the cavities, but it will itself exude to such an extent, that a canal may be found containing a large amount of pure blood. By causing a considerable portion of intestine to be dependent, the blood has gravitated to such an extent, as to pass through the vessel into the cavity, and lie there in the form of a hemorrhage. Two French writers (Rigot and Trousseau) have made numerous experiments upon this subject; and they say that they have frequently made the blood ooze from the inner surface of the intestines, by merely giving a portion of them this dependent position.

You must therefore be aware, that the mere appearance of redness, is not sufficient to justify you in saying that a part has been inflamed. A part may be red because it was inflamed during life; but you must always take into consideration, whether the body has lain long, so as to be partly decomposed, and to allow the diffusion of blood into the substance of the parts. Indeed, a degree of putrefaction not merely allows this infiltration of blood into the parts, but

the parts themselves become dissolved into a liquid substance;—they liquify. As the body putrifies, it becomes soft; and a large quantity of liquid is produced, in addition to the pure blood; and assists materially in dyeing the different parts. You have therefore to take into consideration, what is the period at which you examine the body, and also what is the position of the part;—whether it is such as is likely to have favoured the gravitation of its own blood, and that of other parts, in any quantity. You have also to take into consideration another circumstance, independent of time and of position;—that is, whether any mechanical obstruction existed during life. You may examine a body immediately after death, so that putrefaction has not occurred, and placed upon its back with the stomach high, so that the blood could not have gravitated there; and yet you may see such redness of that organ, that you would consider it inflammatory, if you did not also know, or ascertain, that there had been a mechanical obstruction. If there have been a mechanical obstruction to the return of the blood through the lungs and heart, then that will explain redness of the stomach, without your being under the necessity of referring it to inflammation. There are, therefore, three circumstances to be taken into account;—the period at which you examine the body, the situation of the part as to gravitation, and the previous existence or non-existence of mechanical obstruction. A simple inspection of the parts which are red (provided there is nothing but redness) will give you no information whatever. You must ascertain whether there were any symptoms of inflammation during life; and must observe the three circumstances to which I have just alluded.

There is, however, another circumstance, which will frequently enable you to say that inflammation actually existed; and that is the presence of the products of inflammation. If you find a part intensely red, and you see a layer of lymph effused, or a large quantity of serum,—perhaps *turbid* serum,—perhaps, too, with flakes,—then you may be almost sure that the redness is inflammatory. The redness, it is true, may be increased by decomposition or by mechanical circumstances; but if you see the products of inflammation, then you may fairly conclude that the redness (either altogether, or the greater part of it) is inflammatory. These observations you will find of use, with respect to inflammation in the inner surface of the heart. The lining membrane of the cavity of the heart, especially at the valves, is sometimes very red, without any inflammation. Some persons will say there was inflammation during life; others will say there was not. Of course the point generally may be cleared up by minute observation;—by feeling whether or not the heart is soft, so as to allow the membrane to be stained by transuded blood; but if you see an effusion of lymph upon the membrane, then you may be sure that the redness is of an inflammatory character;—that it is the result of inflammation, either in part or altogether.

These are the observations which I have thought it necessary to

make, respecting the marks of inflammation during life and after death.

Inflammation is usually divided into two kinds;—the one *common*, the other *specific*. "Common" inflammation is that which we see every day, where a local injury takes place, or when a part has been exposed to the vicissitudes of temperature; but the epithet "specific" is given to inflammation, when it runs a peculiar course; or when it arises from a peculiar cause, neither mechanical, nor simply irritative. When inflammation runs a peculiar course, it is then by many called "specific;" but more frequently it receives that appellation, only when it arises from a peculiar cause. For example, inflammation of the urethra, from the forcible introduction of a bougie, or of a catheter, would be *common* inflammation; but the inflammation of gonorrhœa, arising from a peculiar cause, is termed *specific* inflammation. In specific inflammation, you have all the symptoms which occur in common inflammation; but with some peculiarity is superadded. Common inflammation is the groundwork; but in specific inflammation, some other circumstance is superadded.

I will first speak of the course of common inflammation. It may begin with pain, with a blush, and with a feeling of unusual warmth. When an inflammation is first set up, it may begin in this way; but the redness is sometimes not in the form of a blush, but occurs in one particular point, and from that it spreads. If the part be a secreting organ, its secretion will become changed in its appearance, —perhaps changed, likewise, in its odour; and at the same time it is generally increased in quantity. The pain and the redness increase in degree, and also in extent; and then a swelling occurs, or tension; or swelling and tension both. The parts swell to a certain point; and if they cannot swell farther without difficulty, they become tense. As the inflammation proceeds, the secretion of the part generally diminishes again; though perhaps it does not come down to, or does not descend below, its natural amount; but the secretions still remain unhealthy in appearance, and, perhaps, also in smell. As all this goes on, or when it arrives at a certain point, the constitution begins to feel its effects. The pulse becomes quickened; and it likewise becomes variously altered in its volume, firmness, strength, and regularity. Thus the constitution sympathizes at last. The affection of the pulse is not always according to the danger; for in mere inflammation of the tonsils, or in mere rheumatism of the joints, both of which are unattended by danger, you will sometimes find the pulse as rapid and as violent, or perhaps more so, than in many dangerous inflammations. The same remark may be made with regard to the temperature. The temperature of the whole body will sometimes be greatly elevated, although the inflammation may be one of no danger. In a case of mere acute lumbago, I found the pulse at 160, and the heat of his whole body 107°. I find, in a note which I made, that he required no blood-letting at all;—that he merely took *vinum colchici*, for three or four days; and yet that his pulse was 160; and by the thermometer placed in various parts of

the body,—under the tongue, and in the axilla,—the temperature was found to be not less than 107°. The heat frequently varies, too, in different parts of the body.

Besides the alteration of the pulse and the temperature, the patient becomes restless,—uneasy in any position; and complains of general soreness. The whole surface of the body frequently becomes sore;—the patient feels tender, he says, all over. The head frequently becomes painful, and likewise the loins; and sometimes the pain in these two parts, is among the severest constitutional symptoms. The constitutional derangement extends to the secretions; so that most of them become diminished and altered; and from this circumstance you will have, in the first place, thirst. The tongue will be dry or white; and sometimes, if there be much gastric disturbance, it is yellow; or if there be little strength, dark. The skin becomes dry, though in one particular inflammation,—active rheumatism,—it generally falls into profuse sweating. The urine becomes scanty; and though it remains clear, it is high coloured, and has a strong animal smell;—it smells something like gravy-soup. The bowels become torpid; and the fæces unhealthy, both in colour and smell. These are all instances of diminished or altered secretion.

Now these constitutional symptoms altogether, are called by Cullen and his followers *pyrexia;*—not fever, but pyrexia;—fever being the name given by them to certain distinct specific diseases. Some persons denominate these symptoms *fever*, under all circumstances. We have no English word for this term, "*pyrexia*," except we use *feverishness;* but "*ish*" implies only a slight degree of any thing; whereas the pyrexia may be very great; and therefore the term "*pyrexia*" is always better. The word is used by Cullen to distinguish this constitutional excitement, in all circumstances, from those specific diseases, which (whether remittent, intermittent, or continued) he calls *fever;*—to distinguish it from fever properly so called. However, some persons, aware of the confusion which might arise from calling these symptoms *fever*, and other specific fevers (such as typhus) *fever* also, denominate these symptoms, when they are dependent upon inflammation, or some other local cause,—*symptomatic;* and they call the others,—fevers, properly so termed,—*idopathic* fevers;—fevers dependent solely upon themselves,—grounded by themselves. You will, therefore, find these symptoms (which are sometimes called "constitutional excitement,"—"constitutional derangement,") denominated by some writers, "symptomatic fever;" to distinguish them from *real*, specific fever, which they call "idopathic;" but you do not find in Cullen the word "*fever*," given to this state in general; but that he uses the word "*pyrexia*." For the purposes of clearness, it can make no difference whether, in the case of inflammation, we say *pyrexia* or *symptomatic fever;* for all that is necessary is, that we should make ourselves understood.

It very frequently happens, that when the local disease first

begins,—before it has increased to such an amount as to quicken the pulse, and induce the other symptoms which I have mentioned,—the person complains of chilliness, a general soreness, and even rigors, so that he shivers with cold; the pulse at this time being small, the face pale, and the skin rough. From its deprivation of blood, and its low temperature, it is rough; and is called *goose's skin,—cutis anserina;* and this state altogether is called *horripilatio.* After the existence of these symptoms,—this cold stage,—for a certain time, the inflammation appears; and the excitement of the whole constitution gradually comes on. Sometimes, therefore, inflammation begins; and after a certain period is attended with constitutional excitement; but sometimes, the moment inflammation begins, the system falls into a cold stage, like fever;—exactly as happens in the cold stage of an intermittent; so that the local inflammation appears simultaneously with the constitutional symptoms.

The general symptoms are usually proportionate to the intensity and the extent of the local inflammation; and likewise to the importance and sympathies of the organ affected. Sometimes, as I have already mentioned, the general symptoms are out of all proportion in their violence; so that if you depended upon them, and did not ascertain the state of the part affected, and recollect its nature, you might suppose the patient was in the greatest danger, when that was not the case. If you found an individual with a temperature of 107°, and a pulse of 160, you would suppose him in eminent peril, if you did not ascertain that the inflammation was inconsiderable, or was seated in a part not at all necessary to life,—not at all of importance to the system; whereas, the same derangement attending inflammation of an important organ, or attending a very extensive inflammation of another organ, even not so important to life, would point out the greatest danger. You see, therefore, from all I have stated relative to the colour of parts after death, and the excitement of the system in inflammation, a proof that what I before remarked is well founded;—that, generally speaking, we are not to depend upon one symptom,—one circumtance, in a case; but must always take into view as many particulars as we can ascertain.

Besides these local and these general symptoms, the functions of the part inflamed are disturbed. This I have already mentioned, so far as the secreting organs are affected; but other organs are likewise disturbed. If it be the brain that is inflamed, you have delirium. If it be the lungs that are affected, you have dyspnœa. If it be the stomach, you have vomiting. If it be the intestines, you have either constipation or diarrhœa. If it be the bladder, you of course have a frequent and painful desire to make water.

It is not, however, merely these disturbances,—these changes, that take place. The blood itself becomes changed in inflammation. The red particles separate so fully from the fibrin, that this fibrin generally remains colourless and transparent at the top; and, when this occurs, it is said to have a *buffy coat.* There must some change

take place in the blood, for this phenomenon to occur; and, as soon as you remove a portion of blood from the body, you find that some alteration has taken place; for such are the effects. Occasionally the fibrin,—white above and clear from the red particles which are below,—is drawn into such an excavated form,—its centre so depressed, that it resembles a cup; and such blood is called *cupped*. Blood may be buffy *without* being cupped. The red particles may separate entirely from the fibrin, and leave a buffy coat; but sometimes, in addition to this, the fibrin is drawn into an excavated form, so that it is buffed *as well as* cupped.

Occasionally, this buffy appearance of the blood takes place, it is said, without inflammation. It is usual in pregnancy; but then really a pregnant woman is in an inflammatory state;—not a state of actual inflammation; but the condition of the womb is really inflammatory. You see that in pregnancy the whole body frequently wastes. The eyes become hollow; and the whole health, for the most part, suffers a little. The pulse becomes very quick,—quicker than in health; and all the blood-vessels of the womb become greatly enlarged. The womb itself, if it be not in a state which justifies us in calling it inflammatory, is, nevertheless, in a state of such great activity, that it comes as near to inflammation as possible. And, in truth, with regard to other periods of generation,—when animals are "in heat," and copulation takes place, the genital organs become violently red,—violently hot,—perhaps blackened with blood,—as if they would burst; and all the blood-vessels around throb. If that state ought not to be called *inflammation*, still it is very clear that it is all but so; and whatever word you choose to employ, you must look at it as physiologists and pathologists. We cannot therefore wonder that, in pregnancy, the blood should frequently be buffy.

But this state of the blood is sometimes absent in inflammation. You will find a patient undoubtedly labouring under a most violent inflammation; and on using the remedies for that affection, you produce the most decided effects, and cure him; and yet no buff may be present in the blood. This is by no means uncommon in bronchitis; where a patient has a rapid pulse, and great heat of body; cannot turn in bed without coughing; suffers under a difficulty of breathing, so that he is obliged to breathe in a shallow manner; cannot expand the lungs without extreme soreness, tightness, and violent cough. The tongue is white, and violent pyrexia is present; and if you bleed, you produce instant relief to the patient; so that both the symptoms and the treatment prove the existence of inflammation. The blood in many, *many* cases of bronchitis will not show the slightest morbid appearance; whereas, if it were another membrane that was inflamed, instead of the lining membrane of the air tubes (as, for instance, the pleura) the smallest quantity of blood that you could take away, would most likely show an intensity of buff, and be cupped in addition. The absence of this buffiness of the blood, is by no means a proof that there is not inflammation; but, if it be present, it is generally in proportion to the violence of

the inflammation. If you were in doubt as to whether the patient is labouring under inflammation or not, the appearance of this buffiness might justify you in concluding, that the symptoms which you suspected to be inflammatory really were so. The absence of it is no proof at all that inflammation does not exist; but the presence of it will, in doubtful cases, very much confirm your conclusions, that the symptoms you were treating were inflammatory. The buffiness, however, is not necessarily in proportion to the *danger* of the inflammation; because in acute rheumatism, where there is no danger whatever (though sometimes there is danger in acute rheumatism, from internal inflammation) the blood will generally be intensely buffed, and not unfrequently intensely cupped at the same time. You are, therefore, usually to consider this as a mark of inflammation, or of an inflammatory state; but its absence will not warrant you in saying that there is no inflammation; and the intensity of the buffy or cupped state, is not to be considered by you, as a proof that the inflammation is of an exceedingly dangerous character.

Many particular circumstances are necessary to be observed in regard to this phenomenon. The first cup will often be buffy; while the second, taken within a minute or two, is much less so, or perhaps not at all. When this circumstance occurs, I believe the difference generally arises from the amendment of the patient; for the beneficial effect of bleeding is sometimes very striking;—it sometimes checks the inflammation immediately. One may conceive that a certain portion of benefit, in such cases, takes place before half the blood we intend to withdraw is removed; and when the second cup exhibits less buffiness than the first, we may ascribe it to the actual amendment of the patient. The fibrin which forms the buffy coat, is found to be more abundant in inflamed, than in healthy blood; and it is actually found,—at least we are told so; though I have observations of my own upon the point,—that the quantity of the fibrin varies in different cups, taken from the patient at the same bleeding;—that the blood of the first cup, shall actually contain more fibrin, than the blood of the second;—that the bleeding actually induces a change in the blood itself;—that not merely the buffiness, but the quantity of fibrin, whether it form buff or not, is found to vary in different cups; and that it is generally most abundant in the first cup.

Before, however, I proceed to consider the cause of this phenomenon,—buffiness,—I must say a few words upon the coagulation of the blood in general. It has been contended by some, that the formation of the coagulum is to be attributed to the death of the blood. But this I cannot assent to, and for this reason;—a coagulum will often become organized; vessels will actually form in it;—not merely shoot *into* it, but form *in* it, and unite with the surrounding healthy parts. I therefore cannot ascribe coagulation to the death of the blood. Sir Everard Home declares that he has seen

vascularity in a coagulum when detached,—when there was no vessels at all to shoot into it; but when, by its inherent vital power, it had produced vessels. I cannot believe, therefore, that the coagulation of the blood is the effect of its death. John Hunter, on the other hand, ascribed the coagulation of blood to its life. I cannot, however, assent to that opinion either. Freezing is known to kill eggs; and that process must be supposed, therefore, to kill blood; but if you freeze blood and then thaw it, the moment it becomes liquid it coagulates,—just as though it had never been frozen. You must suppose this blood to be actually dead; and its subsequent coagulation, therefore, cannot be ascribed to its life. Sir Charles Scudamore says, that when blood coagulates, a certain quantity of carbonic acid escapes; and that the blood coagulates sooner, accordingly as the circumstances in which it is placed favour the escape of carbonic acid. Consequently he ascribes the coagulation of blood to the escape of carbonic acid. Now the more blood is exposed,—as, for instance, by being allowed to trickle down the arm, instead of coming immediately in the receiver; or by being received into a large shallow basin, which presents a greater surface to the atmosphere, instead of into a small vessel; or by being received into a vessel calculated to retain the heat, and consequently not allowing the blood to cool so rapidly; and more especially by being received into a vessel actually warm;—it is said that, in all these circumstances, the escape of carbonic acid being favoured, the blood coagulates the sooner. This may be all true; but we have very high authority,—as high authority as we can wish for, (namely, that of our own professor, Dr. Turner*), for stating, that no carbonic acid escapes from the blood during coagulation. When we consider that, in the same dead body, we have a quantity of blood liquid in one part, and coagulated in another,—and nothing is more common than to find this the case in the different cavities of the heart, and in its different large vessels,—I cannot ascribe the coagulation of blood either to its life or death, or to its escape of carbonic acid. I therefore beg to say, that I do not know why blood coagulates. I am not satisfied with the reasons that have been given; nor am I not prepared to advance another reason instead of them; and it is always a great point gained to know one's ignorance.

The buffiness of the blood is certainly affected by the slowness of the coagulation; so that if the blood do not flow freely at first, but does afterwards, the quick coagulation of the first cup may not give the red particles time to subside; and this may prevent its being buffy. Hence you see that the quick or slow coagulation of blood, must effect its buffiness. As blood coagulates the sooner the more it is exposed, and therefore the more slowly it trickles down the arm, a thus increased quickness of coagulation, may prevent blood from being buffy which otherwise would be so; and when it comes

* Dr. Turner, the able Professor of Chemistry in University College, died in 1837.

out more freely into the second cup, it may coagulate more slowly; and then, if there be a disposition to buff, the buff will form; so that it is not at all uncommon to have no buffiness in the first cup, but to find it in the second. Therefore, although a patient may have improved from bleeding, and have a disposition to form less buff in the second cup than in the first, yet the accidental circumstance of its trickling down the arm into the first cup, may give rise to an opposite occurrence, and may counterbalance the operation of the benefit. You may have buffiness in the first cup, and none in the second, from the improvement of the patient; or you may have no buffiness in the first, and find it in the second, notwithstanding the patient has improved, from the accidental circumstance of the second cup coagulating less speedily than the first.

But although the quickness and slowness of coagulation may affect the formation of buff, yet they are not the cause of it; for it has been known that, of two portions of the same blood, one has continued fluid ten minutes after the other had begun to form buff, and yet has shewn no buff. When the stream of blood is exactly the same, causing the blood to flow into cups with equal rapidity, you will sometimes find the difference of buff to be exceedingly great; and you will sometimes find the buffiness to be the same when one cup has coagulated very slowly, and the other very quickly. Dr. Stoker has given us some experiments upon this point, in his "Pathological Observations."* He has furnished twenty-seven experiments, in fifteen of which buff was formed, while in the other twelve it was not. Among the twelve in which no buff was formed, no coagulation took place in three of them in less than from twenty to forty minutes; and in four there was no coagulation for eight minutes. There was abundance of time, through the slowness of coagulation, for the red particles to separate from the fibrin; and yet the result was as I have stated; whereas, in the fifteen in which buff was produced, not one specimen delayed to coagulate longer than fourteen minutes; and in all but three, coagulation took place in five minutes; and yet buff was produced. The real cause, therefore, of the buffiness of inflammatory blood, certainly is not the slowness of the coagulation; but from what it proceeds, I do not know. It may be owing to the thinness of the fibrin; for it appears to be a fact, that the fibrin of buffy blood, is both thinner and more abundant than that of other blood. If it be thinner, one may conceive that the red particles will more easily separate from it, and subside to the bottom. That *may* be the reason; but I do not say it *is*. As the quantity of fibrin is known to vary during the flow of blood, so probably may the thinness; and this may be the reason why blood which shewed buffiness in the first cup, exhibits none in the second;—the blood being thicker, the red particles do not so easily separate. However, the buffiness of the blood is not proportionate to the slowness of the coagulation. Dr. Stoker's experiments

* "A Treatise on Fever," by William Stoker, M D. London, 1817.

confirmed the opinion I had previously formed, from observation and reading; yet I believe it is true, that buffy blood generally coagulates more slowly than other blood; although I do not ascribe the buffiness to this circumstance. The slowness of coagulation may be in a great measure owing to the thinness of the fibrin; for if the fibrin be thin, it will probably be less disposed to solidify. It is said that the mere celerity of the circulation, does not effect any changes in the quality of the blood;—that it is not because the pulse is quick in inflammation, that the quality of the blood changes. Sir Charles Scudamore says for example, that where there has been great celerity from pure fever or exercise, no buff has been observed in blood taken away. This, however, has been denied by others.

But although inflammatory blood, showing buff, generally coagulates more slowly than other blood, yet the buff coagulates, if there be strength of body, very firmly,—more firmly than the crassamentum in health. However, the firmness and the cup-like form, are usually proportionate to the strength of the patient; but it is to be remembered, that the firmness of the coagulum is sometimes very great, without there being any cupped appearance. Certainly the firmness of the buffy coat is usually proportionate to the strength of the patient; and the firmness and cupped form are said to be greater (though I do not know that they are) in inflammation of fibrous membranes (such as aponeuroses, ligaments, and tendons), and in inflammation of serous membranes, than of other parts.

If it so happen that the buff of the blood be not firm, then the blood is said to be *sizy;* and when the coagulum of blood is soft, whether it be buffy or not, generally, I believe, you will find the serum too abundant;—at least when the blood is watery, you will usually find the coagulum soft, whether it be a red coagulum or a buffy one. Two writers, Trail and Gendrin, (one in our own country, and one abroad), say that the serum of inflammatory blood is altered in quality;—that it contains twice as much albumen as is found in health.

The cupped appearance of the blood, independently of the buffiness, is very much affected by the size of the vessel into which you draw it. If you extract the blood of a patient into a tea-cup, you have an infinitely greater chance of finding it buffy, than if you draw it into a hand-basin. The larger the vessel, the less is the disposition to form the buff, and likewise to form the cupped appearance. For accurate observation, blood should certainly be drawn into small vessels.

These are the gross changes, if I may so speak, in the blood; but some writers say that there are still more minute changes. Dr. Hastings says that, with a microscope, he found the blood in inflamed capillaries of a deeper colour than usual;—as it were, broken down,—homogeneous,—with no appearance of red particles. The remark does not apply to the general blood in the system; but to that of the inflamed vessels themselves. He says that, in three experiments, there were flocculi in the inflamed vessels; which

which disappeared as he directed his eye toward the healthy vessels. What these flocculi were, I do not know. Whether they were exceedingly minute coagulations of lymph, formed from the slow motion of the blood,—for it moves more slowly in an inflamed part,—and which were re-dissolved when they reached the vessels where there was a proper motion, I cannot tell.

It is a general observation, that the blood is very black in the neighbourhood of inflamed parts; and when you apply leeches, it is not till the latter end of their application, and perhaps not till after several applications, that it becomes bright. This is a fact. You will find that the blood which comes away first, is generally very black; whereas the blood that streams afterwards, will become brighter; but it will sometimes remain black, till the second or third application of leeches. I have observed this frequently; and I presume it arises from this circumstance;—that the blood, from moving slowly, acquires more of a venous character. I have known the blood, times innumerable, to be black on the first application of leeches; and I once knew the blood, in a case of chronic inflammation of the liver, highly offensive; so that almost as soon as it was removed, it went into a state of putrefaction; but as leeches were applied day after day, it became brighter and brighter, and at last regained its natural odour and nature. It would be wrong to consider inflammation as merely affecting the solids; it affects likewise the blood itself.

Inflammation may terminate in complete health of the part. The part may, in a direct manner, regain its former state; and when this is the case, it is said to terminate in *resolution.* But generally, when there is this resolution, there is some increased secretion, either at a distant part, or (if the part affected be of a secreting character) in that part itself. If it be a serous membrane, there is more or less effusion; if it be a cellular membrane, there is a more or less œdematous condition, which you can observe externally. But if these effects be very slight,—only temporary, perhaps no inconvenience is produced; and the termination of inflammation is then said to be in "resolution." If, however, it be a serous membrane that is attacked, and there be a copious secretion, it is said to terminate in *effusion.* If it be a cellular membrane that has been inflamed, and it does not terminate in resolution, a new fluid is formed, called *pus;* and the formation of this new fluid is denominated *suppuration.* If it be a mucous membrane which has been affected, you generally have a great discharge either of mucus or pus; so that you may have suppuration either from a cellular or from a mucous membrane. It is actually pus that is formed, in inflammation of a mucous membrane; nay, you likewise have pus produced from the interior of a vessel. But it is right to say, that although authors call these "terminations," yet these copious secretions are not necessarily terminations; and that when they begin, it is not a matter of course that inflammation shall end. We ought rather to say, I think, that inflammation sooner or later induces

effusion, or induces suppuration; because the inflammation does not always cease when they take place. Although the part may suppurate, or fall into a state of effusion, still these processes may be inflammatory. You may still have to go on with anti-inflammatory measures;—you may still have heat, pain, tenderness, and all the marks of inflammation. We ought, as I have just observed, rather to say that inflammation, sooner or later, induces these changes; or that these occurrences take place in inflamed parts;—the inflammation subsiding or not, just as the case may be. Inflammation may terminate, however, not in health, (either directly or after these processes), but in *death*, either general or local. You may have inflammation destroy life, without any farther change taking place, than the occurrence of inflammation itself. It is very common to see persons die of enteritis, without mortification or any other change than inflammation. It sometimes happens, however, that inflammation does not destroy general life, but the life of the individual part; and then it is said to terminate in *mortification*. But the inflammation may still continue,—not in the dead part, but in the parts around; and may extend farther, till more parts die; or it may not;—just as the case may be.

I will now speak particularly of these various "terminations," as they are called; the first of which,—resolution,—is really a termination. When an inflammation is resolved, all the symptoms decline, and no fresh symptoms arise; and this is essential to the character of resolution. In this state, the urine generally deposits an abundant red sediment. When the inflammation is going on, the urine is generally high-coloured, but clear; but when the inflammation subsides, there is usually a copious red sediment; and the reason of this, as given by chemists, is the following. In healthy urine there is lithate of ammonia, which is pale and white; as also a yellow colouring matter, the nature of which is not known, but which is thought to be probably a modification of lithic acid. If to lithate of ammonia out of the body, you add what are called the *purpurates*, you immediately produce a pink substance,—such as you find in hectic fever; and if the urine have its usual yellow colouring matter, a mixture of that with the pink substance, produced by the purpurates and the lithate of ammonia, gives a red colour;—pink and yellow mixed together, form a red colour. In this diseased state of things, nitric acid (as chemists tell us) is formed in excess in the urine; and acts upon the lithic acid,—converting some of it into a new acid, called *purpuric*. This purpuric acid, uniting with the salts of the urine, makes the purpurates; and these purpurates, mixing with the lithate of ammonia, (which is always in the urine), produce a pink deposit; which pink deposit, united with the yellow colouring matter, becomes red. The lithates of ammonia and soda are formed in excess in the urine during inflammation; and nitric acid is produced; which, as I have said, acting upon the lithic acid, produces purpuric acid; so that the purpurates are formed. These, mixing with lithate of ammonia, produce a pink substance; and

when this unites with the yellow colouring matter, the colour is changed to red. This is the reason why the deposit is red. The reason why the urine is red without sediment, till the inflammation declines, is this;—the same substances are in the urine, but held in solution during the activity of the complaint; but when it declines, an excess of lithic acid is formed, producing super-lithates; and these are very insoluble; and therefore a great portion of them falls down in the form of a precipitate. Hence you have the red sediment. This is the explanation given by one, who understands these things better perhaps than any other man in Europe;—I mean Dr. Prout. You find these changes in the urine;—the deep-red colour, with transparency, during the activity, and the copious red deposit during the termination of the disease. You find these very same things from the most common cold; and certainly often in the same abundance.

If, however, the inflammation do not terminate in resolution, but produce such an effusion as from its quantity may do harm, then, when the symptoms of the inflammation subside, (or, indeed, whether they subside or not), you have a fresh set of symptoms come on, from the compression of the parts. For example,—if the pleura has been inflamed, and the inflammation induces at last copious effusion, after the pleuritis has subsided, you have a fresh state of symptoms, dependent upon compression of the lung. When there is this excessive effusion, however, in a serous membrane, there is generally something more. Fibrin is usually thrown out,—sometimes forming layers,—sometimes diffused in the serum, and forming flocculi, larger or smaller; so that the serum is turbid; and it may not only be turbid, but may have flakes in it. When serum is thus poured out by a serous membrane, it is at last often entirely absorbed while the fibrin remains; and frequently we find fibrin where there is no appearance of serum;—the serum having been absorbed, or fibrin alone having been produced. Fibrin, so poured out, has been seen in so short a time as four hours after the commencement of inflammation. Professor Thomson, of Edinburgh, says that he has seen lymph lying on a serous membrane, within four hours after he had induced inflammation. Sir Everard Home says, that he has known an effusion of fibrin form vascular adhesions in the course of twenty-four hours. So rapid are these changes, that it appears inflammation may cause an effusion of lymph in four hours; and that within twenty-four hours from the very first, this portion of fibrin may become an adhesion, containing blood-vessels. Sometimes the effusion which occurs is not serum,—is not lymph, or serum and lymph; but is pus. Thus you may have the pleura, the pericardium, or the tunica vaginalis, filled with pus; and sometimes with a mixture of pus and serum.

If the third effect of inflammation take place,—not resolution, or effusion, but suppuration,—then the pain indeed generally ceases, but the swelling which was present during the inflammation still remains; and if there were not much swelling before, perhaps there

is a good deal now. This swelling, however, does not, as when a part is inflamed, feel hard; but is for the most part soft; and frequently you may discover fluctuation early. Sometimes you cannot discover this at first; but as the fluid increases, you discover it more and more, till the fluctuation is most decided. The pain, however, does not always go away. It may decline at first; but as the fluid increases, you may have fresh pain from tension of the part. The part may become exceedingly tense from the quantity of fluid, which is afterwards absorbed, or escapes either by art or natute. There may be very considerable pain. Besides this, just as in *effusion* of a serous membrane, where there is suppuration of a cellular membrane, or of any organ, you may have fresh symptoms from pressure. That, however, depends upon the situation of the part. If the part in which the pus collects, be one which will suffer from compression, then you may, of course, have fresh symptoms from the mere compression. But besides this, if the suppuration be extensive, you have general shivering. As soon as the matter forms, or when it is forming, or soon after it, what are called *rigors* take place; and after a time you have great heat and sweating. In fact, you have what is called *hectic fever.*

This hectic fever is marked by a quick, but weak pulse; by heat of the whole surface, but particularly heat with a red flush upon the cheeks, the palms of the hands, and the soles of the feet. Sometimes the whole of these are red; but more frequently the redness is partial, forming patches; so that a portion of the cheek, the size of half-a-crown, more or less, may be intensely red, while all around is of the usual pale character. In addition to these symptoms, the patient has profuse sweating; so that as soon as he falls asleep, he is almost sure to fall into a sweat; and frequently when not asleep he still sweats. These symptoms are generally aggravated at night, and frequently also at noon; and indeed at any time when food is taken. It is remarkable to notice the effect of sleep upon the sweats. If a patient fall asleep but for two minutes, although he may not know it, it is very common to find these sweats break out; and they are frequently very partial, being observed particularly about the head and chest.

In this state of things, the sediment of the urine is not red, but pink. I should have said, that when it is red it is called *lateritious,*—looking like a brick. In hectic fever, when the suppuration is going on, the sediment is of a pink colour. The chemical changes are precisely the same;—the purpurates acting upon the lithates, and producing this pink colour; but this pink colour is not changed to red; because it appears that the yellow colouring matter of the urine is absent, and therefore the pink of the purpurates and lithates remains unchanged. The intestines often pour forth a fluid as abundantly as the skin; so that you have purging; and not unfrequently the purging alternates with the sweating; so that if you have an increase of the sweating, there is a decrease of the purging; and *vice versa.* This sweating and this purging are called *colliquative,*

—melting the patient down; and hence the name. The alimentary canal often becomes inflamed; and when you open a patient who has laboured under this state, you find the mucous membrane red,—sometimes ulcerated. The tongue at length becomes red. You may see it yellowish, or of a deep brown colour; but for the most part it is red, either on the surface, or at the tip, or at the sides and tip. The mind generally becomes very quick; the patient is excessively alive to every thing; and, at the very last, a degree of delirium takes place. When that occurs, it is usually the precursor of a fatal end. I need not say there is usually extreme debility and wasting of the body.

It is to be remembered, however, that these symptoms, called "hectic fever," may occur without any suppuration. They will occur, I know, from mere depression of mind; they will occur frequently in women from excessive suckling;—from suckling too much, or suckling too long. All these symptoms, without suppuration, will sometimes remain for a great length of time; and the patient at last, by proper management, do very well.

If the pus, which is formed, be collected into a mass, we term the collection an *abscess*. Supposing the formation to take place in a cellular membrane, fibrin is thrown out; and the cellular membrane exterior to the fibrin, becomes more dense and more vascular. A cavity is formed in the lymph, and contains the pus; and the exterior of the cavity is formed of the condensed cellular membrane. This lymph, forming the cavity, is gradually absorbed in one part; and that part is usually one which is nearest to the surface, or some exit of the body; so that if it be nearest the surface of the body, the portion nearest the surface is absorbed; or if it be near the intestines, the portion nearest the intestines is absorbed;—and so on. Wherever there is the easiest exit for the contents, there the fibrin becomes absorbed. This is a very extraordinary and beautiful provision of nature. If there be a possibility of the pus escaping into a part where it might do harm, adhesions are formed all round that situation, so as to prevent the escape of the pus into it. Nothing can be more wonderful in pathology than this;—than the process of nature in giving exit to the matter, in a way the most calculated to facilitate this discharge, and in taking steps the best calculated to prevent mischief.

I should mention, that I have put together all the arguments relating to the coagulation of the blood,—in fact, every thing I know upon the subject,—in one of the notes on the blood, in my translation of Blumenbach's "Physiology."* I feel a little delicacy in referring to a book of my own; but I trust you will excuse me if I should sometimes have occasion to do so.

If then there be any danger of mischief arising from the circumstance of the walls of the abscess becoming thin, and letting out the

* See Appendix, No. II.

pus into a cavity, or part of the body where serious consequences would result, (as, for instance, into the peritoneum), then a great deal of additional lymph is frequently thrown out,—glueing the various parts together; in order to prevent, as much as possible, the liability of the escape of the pus in an improper direction. Thus you see that nature usually thins the walls of the abscess, at that point which is most eligible for the escape of the pus; and thickens them where it would be dangerous for the pus to escape.

The absorption at the former point, wherever it may be, goes on. If it be near the surface, we see the chief swelling at one particular part; and the collection is said to *point*. At length a minute opening is formed, and the matter escapes. When the latter occurrence takes place, and the cavity is thus opened, minute red granules are seen within,—highly vascular, soft, and covered with pus. In fact, they secrete the pus. Sometimes the opening at which the matter escapes, although small at first, enlarges; absorption takes place to a great extent; ulceration runs on to a considerable distance, and perhaps lays bare the cavity very much.

These red granules which secrete the pus, grow larger and larger, till the cavity is filled up. This process is called *granulation*. When the cavity is entirely filled up, portions of skin form upon its surface, and portions of the surrounding skin are prolonged into them; so that you have a double source of new skin. Fresh skin appears in insulated points; and the healthy skin around shoots prolongations into it. In this way the surface of the granulations becomes covered with skin, and is healed. The smaller the granulations are, the better; for if they be large, they are generally spongy; and the common people then denominate them *proud flesh*.

From the loss of cellular substance which takes place in the formation of the abscess,—for the cellular membrane is more or less destroyed; and from the contraction of the new parts,—for these granules, which were very vascular at first, become less and less so; —from the loss of the cellular membrane, and the contraction of the new parts, when all is healed, we see a depression. If it be a very minute abscess,—such as is only called a *pock*, (as in small-pox), then you have merely a little depression,—a pit; but if it be a more extensive formation of matter that has taken place, then you have *scars*. They are exactly the same thing, only on a different scale. The contraction of the new parts, and the loss of the cellular membrane, are sometimes so great, that the joints cannot be extended; and the arm becomes bent to the body, or the fingers bent down to the hand.

It is said that pus is sometimes collected in an abscess, in this way, without any lining of lymph; but when the latter is absent, the pus is almost always diffused. You frequently have pus formed in the cellular membrane in a diffused manner, so that it will run to a great extent and do very serious mischief;—producing, wherever it spreads, new inflammation and the most frightful devastation.

This is observed in that form of erysipelas styled *erysipelas phlegmonoides*. Where suppuration takes place in the cellular membrane, uncontrolled by a cup of lymph, it often runs on extensively; and sometimes a whole arm, or a whole thigh, is in this way covered by a sheet of matter.

You will, however, sometimes have a formation of pus, and an absorption of the skin and cellular membrane, without any collection of matter. This is seen every day in the case of the throat, and sometimes upon the skin itself; but more frequently upon a mucous membrane. If a mucous membrane be attacked by a slight inflammation, the epithelium may be absorbed, together with a small portion of the mucous membrane;—in fact, you may have an ulcer; and that ulcer will secrete pus, without there being a collection of matter underneath. In an abscess, the matter is formed in the cellular membrane, or in a solid structure, and tends outwards; but frequently, in a mucous membrane, the process goes on inwards. Nothing is more common than to see this in the throat. The surface, which is a little inflamed, becomes abraded; matter is formed upon it; and in that way you have an ulcer without the previous existence of an abscess. If the part heal, it is afterwards filled up;—in the same way as if the matter had been collected in a cup, in the cellular membrane.

Pus, if healthy, is an opake fluid, yellow or white, homogeneous, short, and creamy; so that, if you take a drop between your fingers and separate them, it breaks. The drop divides into two;—does not hang in strings. It is generally bland to the taste, and without smell. Some say it is rather *mawkish;* but one never thinks of tasting it, except in the case of a gum-boil, or other suppuration in one's own mouth. If it be perfectly healthy, it is inodorous and bland; or, at the utmost, there is only a mawkish taste. It is said to be neither acid nor alkaline; although, by exposure to the atmosphere, it turns sour. It is also insoluble in water. It contains globules; and hence it is distinguished from pure mucus, by being placed between two bits of glass, and then looked through at the sun. From the existence of the globules, you have an irridescent appearance,—the colours of the rainbow. This is not the case with mucus; for mucus contains no globules. When pus is first secreted, however, it is said not to be globular; and that these globules do not appear in it, till it has been poured forth from the vessels for fifteen minutes. Mucus, again, is not short, like pus. If you take a portion of mucus between the finger and thumb, and separate them, you find that it drags out into threads;—it does not break off short, like pus. I believe it is known by those who have had much to do with gonorrhœa, that, when the disease is violent, the secretion from the mucous membrane is purulent;—it regularly breaks off between the fingers; whereas, when the disease declines, and pure mucus is again secreted, a person has a full conviction that he is getting better, by finding that the discharge will drag out between the finger and the thumb.

Persons have endeavoured to discover the difference between pus and mucus, by chemical tests. John Hunter says, that he found pus easily coagulate by a solution of muriate of ammonia; but that mucus would not. Dr. Darwin (Junior) says, that a solution of caustic potass does not dissolve pus; but makes it a viscid semi-fluid substance;—stringy, like mucus;—not dissolvable in water; but resembling the diseased mucus of the bladder. When that viscus is in a state of chronic inflammation,—when the mucous membrane is in a state of cystorrhœa, and there is a great discharge of mucus from the surface, its mucus is very ropy, and may be dragged out to a great length; and this is the appearance which pus exhibits, if it be mixed with a solution of caustic potass. Dr. Darwin also says, that the same effect is produced, by adding to the pus sulphuric acid; whereas, if you add these things to healthy mucus, small flakes are produced, and not a stringy semi-pellucid substance. On the other hand, two modern French writers (Andral and Baumes) deny this distinction. Then you find another chemist (Grasmyer) say, that if pus be triturated with an equal quantity of water, and this combined fluid be then mixed with an equal quantity of carbonate of potass, a jelly is produced in a few hours; but that is not the case with mucus. Pus in general sinks in water, but mucus generally does not; and if pus be diffused in water, the water becomes uniformly white.

As to all these distinctions, however, the fact is, that pus and mucus run into each other. Mucus may be diseased, so as to be something like pus,—puriform; and they will run into each other by insensible degrees. In disease of the lungs, the distinction between pus and mucus has been thought most important, as tending to shew whether ulceration exists; but here the two secretions are continually mixed together. When there is an abscess of the lungs, or a number of abscesses, and matter is discharged from them, you will have, at the same time, a quantity of mucus secreted from the bronchial tubes, so that the pus and the mucus are expectorated together; and in proportion as the former surpasses the latter in quantity, or the latter exceeds the quantity of the former, you have the character of the one or the other. If the quantity of mucus be very considerable, the pus may be borne up by it in water,—not allowed to sink. Besides this, there may be an abscess in the lungs; and there may be also an excavation; and this not secreting pus, but really mucus. The lining membrane of the cavity in the lungs, at least if fresh ulceration have not taken place, may secrete mere mucus. Again, every mucous membrane which is inflamed, may produce absolute pus; so that you may see puss discharged from the lungs, when there is no ulceration at all; while, on the other hand, there may be an ulceration of the lungs; but the lining membrane of the abscess may have become of such a mucous character, that it secretes real mucus, and nothing else. In addition to this, you may have mucus from an abscess in the lungs, and pus from the bronchial tubes, (in consequence of these being in a state of

irritation), combined together in various proportions; so that the distinction between the two, is not of the importance which was once imagined.

With regard to the constitution of pus, Schwilgué (who is one of the last that has analyzed it) says that it consists of albumen, extractive matter, fatty matter, soda, muriate of soda, phosphate of lime, and some other salts. When pus is scrofulous, it is said to have more soda and muriate of soda, than healthy pus. Pus was once imagined to consist of the dissolved solids. Seeing that a cavity existed, it was imagined that the solids were melted down, and turned into pus. But then you frequently have pus, as I just now stated, when there is no ulceration at all; and the formation of pus is not in proportion to the loss of the solids. You may have, from a small abscess, an immense secretion of pus, if by chance the abscess do not heal; and yet it does not extend. The truth is, the pus is a new secretion. Whether globules are formed in it;—whether it is perfect or not, immediately;—whether fifteen minutes are required to produce the globules, and fully form the pus;—is of no consideration. The fluid which constitutes the pus is, to all intents and purposes, a secretion. Yet I believe pus will dissolve *dead* solids; although it is not dissolved solids, yet it will itself dissolve them,—making a solution of them, if they be dead. John Hunter found dead flesh dissolve very readily in pus. He put an equal quantity of dead flesh into pus, into jelly, and into water; and he found the portion put into pus dissolve very readily, while the portions put into jelly and water did not. Hence it would appear, that pus is useful in dissolving the solids when they die; and the cellular membrane continually dies in phlegmon. When an abscess is formed, the pus, no doubt, dissolves a portion of the cellular membrane; but still it does not dissolve it all; for when you open an abscess, you continually see escape portions of dead cellular membrane, which are called by the common people the *core*.

Healthy pus is called by the old writers *laudable*. I recollect, when a student, hearing good pus, instead of being termed *healthy* pus, commonly called *laudable* pus,—*praiseworthy* pus. Healthy pus should abound with globules. I may mention that one writer (M. Gendrin), says that these globules differ from the globules of the blood only in being larger, and of an opake yellow colour. Some say that the term "*globule*" is improper; that these particles are not exactly globular, but irregular in size and shape; but still all agree that there are certain particles in the pus, as there are in the blood.

Healthy pus, then, should abound with globules; but if they be deficient, and the pus be watery, then we have what is called *ichorous* pus. But there may be other differences in pus, besides a deficiency of globules. When pus is thin, like water, it is called *ichorous;* if it be thin and bloody, then it is called *sanious;* and it is called *scrofulous* if there be in it little curds; which curds, very possibly, are shreds of lymph. Pus sometimes very much resembles mucus. It does not

abound sufficiently in globules; is glairy or muciform; and will hang out in little, slight strings. When mucus, however, becomes something like pus, we call it *puriform.* Although healthy pus is inodorous, and said to be only mawkish to the taste, it frequently becomes fœtid. This particularly occurs if a bone be diseased; but in suppuration of the tonsils, likewise, it is not uncommon for the pus which escapes, or is let out by a lancet, to be most horridly fœtid. Generally, however, it is when pus comes from the bone, or the immediate neighbourhood of a bone, that it assumes this fœtid character.

I have already mentioned in how short a time lymph and fibrin have been seen effused on a serous membrane; and pus also has been seen to form in a few hours. It has been seen produced by a mucous membrane, in a few hours after inflammation has been set up; and when an abscess has been produced, matter has been formed in so short a time, as from twelve to eighteen hours from the commencement of the inflammation.

The next termination of which I shall speak, is *mortification.* This is shewn by the part becoming of a darker red than before. When a part is about to mortify, it grows of a dingy red; from red it becomes purple, and then black; and when it is once dead, from the decomposition of the matter, it changes to a green colour, and various other hues. The pain ceases; the part becomes cold; and, if it be the surface, we often see vesicles; which, although they are frequently filled with a pale fluid, yet are more frequently filled with a bloody serum. If it be the skin which is mortified, it becomes variegated; and perhaps the part crackles, too, under the finger. From the extravasation of air, the swelling increases; and the part has often a doughy feel. These are the *local* symptoms; but *general* symptoms take place. There is extreme prostration of strength, with extreme restlessness. The face becomes ghastly; the pulse becomes rapid and exceedingly weak,—perhaps intermitting and irregular. There is a general fall of the temperature of the body; and a cold clammy sweat takes place. The tongue becomes brown or black; the manner becomes exceedingly quick; and frequently a little delirium takes place. The cessation of the local, and of all the violent general symptoms, will take place just before death from inflammation, when that inflammation does not cause mortification, or any other local change;—although, when mortification occurs to any extent, you will have the very same thing. That is to say, you may have the cessation of pain, the ghastly countenance, the rapid, feeble pulse, the extreme sense of debility, restlessness, and at last death, without any mortification,—without any other local change whatever. I believe I mentioned before, that frequently from the symptoms of enteritis, you would imagine that mortification of the intestines had taken place; but on opening the body you may find no mortification,—nothing but intense inflammation.

When the parts inflamed become of a purple colour, and cold, and fall into incipient mortification, restoration is not impossible. Parts will recover that have become purple, and lost a portion of

their temperature. Even parts which have been congealed, will recover by good management; but this, I believe, takes place in man and the other warm-blooded, more than in cold-blooded animals; and professor Thomson, of Edinburgh, says that if a *whole* limb be frozen, it is never restored. A still higher degree of mortification is called *gangrene;* and the complete death of a part,—when it is dead,—gone irrecoverably,—is termed *spachelus.* In the latter case, the part is cold, senseless, black; and putrefaction follows. There are three degrees, therefore, of mortification;—the one where the parts are merely purple and cold; a second where things are more advanced, but the part is not absolutely dead; and the third, in which the part is really dead;—*mortificatian* being the generic term for all the three stages. When a part is dead, and putrefaction is begun, the progress of the latter depends very much upon external circumstances. The warmer the weather, of course the more readily will putrefaction take place.

If the part, which is in a state of sphacelus, be not important to life, it may be separated by nature from the body. The process of nature here is exceedingly wonderful. The large vessels, which go to the part, become plugged up;—a coagulum of blood forms in them, or adhesive fibrin is poured out from the inner surface; so that in one way or other the progress of the blood is arrested; the consequence of which is, that it coagulates to some extent above the plug, and the plug thereby becomes increased. Dr. Thomson, of Edinburgh, says, that a coagulum never extends higher than the first communicating branch; and that is what you would suppose. The blood coagulates behind the plug, nearest the heart; and you cannot, therefore, expect a plug to extend beyond the first communicating branch. He says that sometimes he has seen a vessel completely obstructed, without the formation of any plug at all;—the whole obstruction being produced by an effusion of lymph,—lymph which has become organized, and formed an internal adhesion. Nay, he says that sometimes he has seen an artery completely obstructed without any lymph,—without any plug; but simply from its becoming closely contracted;—so contracted that it would not admit a bristle. The contraction has formed as complete an obstruction to the blood, as the existence of a coagulum, or of a quantity of fibrin, would have done. He says that he has noticed the same circumstance in an amputation, where no ligature had been employed. The vessels have become so contracted, as not to admit of the introduction of a bristle; and have thus prevented all hæmorrhage. In whatever way it is done,—whether by a coagulum of blood, or by a plug of lymph forming an adhesion, or by the mere contraction of the vessels, or by any two of these,—such is the fact, that nature generally succeeds in preventing hæmorrhage from a mortified part, by obstructing the course of the blood in the larger vessels leading to it.

The process of separation is accomplished in this manner:—A

red line appears at the boundary of the healthy part, which is nearest to that which is dead. This red line, of course, is a line of inflammation; and in it ulceration takes place, which goes down in the healthy part lower and lower, till a complete separation takes place; and in this way a whole limb is sometimes separated from the body.

Of course I have been speaking of soft parts; but if a long bone die, (which is a very common thing), without any death, or any especial disease, of the surrounding parts, a new bone is formed around it. The process of nature, therefore, is quite different here, from that which is employed to separate a dead soft part. In this case a new bone is formed under the periosteum, around the dead portion; and in this way the parts exterior to the new bone (namely, the periosteum, the ligaments, and the cartilages) all become attached to it. When the old bone within the new one is detached,—completely loosened, then an opening is formed in the new bone; ulceration takes place in it at one spot; granulations occur on the inner surface; and these granulations push the old bone through the ulcerated opening in the new one;—at least they tend to do so. The aid of a surgeon is frequently of use in assisting to draw out the old bone, and enlarge the openings in the new; but this is the process adopted by nature when a bone dies. This process is called *necrosis;* and the old bone within will frequently rattle, like the kernel of a dry nut. The old bone is called *sequestra.*

If, however, it be not a long bone which is dead, but merely a plate, or a flat bone, this is separated by ulceration. Granulations form under the old bone and push it off. This process is designated *exfoliation;* because the bone comes off like a leaf (*folium*).

These are the "terminations," as they are called, of inflammation; but I should rather say, they were the *effects* of inflammation than *terminations;* because inflammation does not necessarily terminate when they occur. Inflammation frequently goes on after these effects take place; and therefore we ought to say, strictly speaking, that these are the *effects* of inflammation, or circumstances that occur from inflammation.

You will find that authors mention *schirrus* among the terminations of inflammation; but if by that they mean the schirrus which afterwards becomes cancer, they are certainly wrong; because schirrus will occur without marks of inflammation. A part, without these marks, will gradually become cancerous. It seems to be a specific disease. If, however, by *schirrus* these writers mean *true* schirrus,—mere induration, then they may be right; because one of the effects of inflammation is to harden. When a part has been inflamed for a length of time, it frequently becomes indurated; so that schirrus, in that sense, may be said to be the effect of inflammation, but not a *termination* of it; because the inflammation will go on, and the part become more and more indurated. Induration, however, is only one of such effects of inflammation as they ought to enumerate; for it

has as great a tendency to cause parts to become softened, as hardened. Induration is rather the effect of chronic inflammation; while acute inflammation rather produces softening.

Having spoken of the effects of inflammation, I now proceed to consider its duration; and this is very various,—depending much on its intensity. If an inflammation be exceedingly violent, it cannot last long; but if that be not the case, it may last a great length of time. Inflammation may exist for only a very few hours, and may certainly destroy life in the course of a day. It is sometimes so rapid, that a person shall be well in the afternoon, and die from it before the next morning is much advanced. I recollect myself seeing, last winter, a case of pericarditis, which occurred suddenly in the evening, about seven o'clock, from a lady having exposed herself to cold, by walking about the house half undressed; and she was dead before eight the next morning. Inflammation may be so acute, as to destroy life in a few hours, without any mortification, but simply from its own intensity. Inflammation may be even almost momentary; but that will depend upon the use you choose to make of words. Certainly a child is sometimes seized with a violent rush of blood to the head;—its eyes will become red;—its face flushed;—and its head distracted with violent pain. It screams; and death ensues in the space of one or two minutes. The same thing will happen in adults. After death, a great quantity of blood will be found within the cranium, and externally to it. If this state be inflammatory, it certainly proves that inflammation may be almost momentary; and that it will destroy life in this sudden manner.

But inflammation, if it be not violent, may last for many months, and even years; for if it remit, it may often be tolerably violent, and yet continue for a very long time;—its severity not remaining the same during the whole of the period. If it once degenerate into the chronic form, it may last indefinitely; and when it does so, it generally induces various changes of structure, which I will mention hereafter. When a part has been once inflamed, the redness will occasionally remain some years, without any pain or any heat. You may see this frequently after burns, and after cutaneous diseases. A portion of a scar will remain exceedingly red;—the vessels would appear to be in a state of passive dilatation. There is no pain, no heat, no tenderness; but extreme redness; and this, after it has existed a year or two, or perhaps longer, will sometimes decline; and the vessels will at last gradually recover their natural tone. After ulceration, the skin will frequently remain of a red colour, perhaps of a very dingy red, and almost of brown colour. In the case of a person who has had a sore leg, you will see that the portions corresponding with the spots of ulceration, are frequently very red, brown, variously discoloured, or perhaps nearly black.

Such are the usual phenomena of inflammation. Such are the chief symptoms; such are the general effects or terminations; and such is its course. The next point which I shall consider, is the

variety in all these symptoms, and the variety in the course of inflammation, occasioned by the nature of the *structure* which it attacks. The consideration of the varieties induced in inflammation by the structure affected, was first thought of, I believe, by Dr. Carmichael Smith; who published (in the second volume of the "Medical Communications," printed in 1788) a very admirable and classical paper on this subject. He it is, I think, who really has the merit of having first considered diseases according to the structure which they affect. He, however, considered only inflammation. Nearly ten years after this, Pinel, a celebrated French physician, adopted this same arrangement; and he, I believe, generally has the credit upon the Continent; while our countryman is overlooked. Bichat, in his "General Anatomy," afterwards pointed out that *all* diseases, in fact, might be considered according to the structure which they affect.

There are five chief structures, which Dr. Carmichael Smith considered as giving rise to the most decided varieties in the symptoms of inflammation. These are the skin, the mucous membranes, the serous membranes, the cellular membrane (including the substance of the organs), and (according to him) the muscles; but we ought rather, perhaps, to say the fibrous membranes;—such as ligaments and aponeuroses, tendons, and the periosteum.

When the part inflamed is the skin, it exhibits an intense shining redness, which is instantly removed by the pressure of the finger; and as instantly returns, or nearly so, when the finger is removed; so that you make the skin white by pressure; but almost as soon as you remove the finger, you find a blush pervading the part, and then it becomes as red as before. If this inflammation of the skin be of a simple character, and in a patch,—if there be nothing more than the inflammation of the part, the term given to it is *erythema*. It is not every inflammation which is erythema; but the simplest patch of inflammation on the skin is so designated.

The character of the pain, when the skin is inflamed, is burning and smarting; and when the inflammation subsides, it is frequently followed by the separation of the cuticle in branny particles, or scales, or even large shreds. This process is called *desquamation*.

Very frequently, when the skin is inflamed, we have vesicles appear, of various sizes; and not unfrequently there is a very great effusion of serum into the subjacent cellular membrane; so that where the skin is inflamed, the whole part becomes swollen, puffy, and œdematous. As the skin is a continuous surface, every inflammation of it which is entirely superficial, has a great tendency to spread; and sometimes when that takes place, the part first affected recovers itself; so that the disease appears to wander along the body, like a cloud;—forsaking one part, and going to another. But, on the other hand, you sometimes have the part originally inflamed still affected;—the disease having merely extended itself still farther. Sometimes the inflammation does not spread in this

way, but dips down; so that the cellular membrane below is not merely filled with serum, but becomes the subject of actual inflammation. If this occur in mere points, matter may be formed; and you have what are called *pustules*,—a number of little minute collections of pus. Sometimes they may be formed, indeed, without the cellular membrane being affected,—the surface of the skin alone being attacked; but frequently the pustules extend also through the skin, deep into the cellular membrane. Sometimes, moreover, a frightfully extensive inflammation of the cellular membrane takes place;—suppuration being very likely to occur; and then the disease is designated *erysipelas phlegmonoides;* or (as some choose to call it) *diffused inflammation of the cellular membrane.* You see, therefore, that the skin may be inflamed superficially, and remain so; or the inflammation may dip down into the cellular membrane below; and then you have all the characters of inflammation of the cellular membrane, in addition to those of inflammation of the skin. This may be considered a complicated disease;—at least an inflammation of two parts.

The second structure which gives variety to inflammation, is mucous membrane. Mucous membranes, you know, are very nearly allied in structure, as well as in all other qualities, to the skin. You will find in Bichat's beautiful "Treatise on Membranes," the analogy pointed out between mucous membranes and the skin. It is a work well worth your study. When a mucous membrane is inflamed, it becomes thicker than usual; its temperature increases; and it is tender to the touch. The pain which is experienced is dull and diffuse, though sometimes it is of a pricking character; but if not pricking, it is obtuse and diffused. When the inflammation first begins, the secretion of the part is increased. It is, however, watery, or thin; and perhaps acrid. This any one may observe in a common catarrh. When a cold begins in the Schneiderian membrane of a nostril, the nose "runs," as it is called. The secretion is increased; but is not, at first, very excessive; nor is it thick, but thin; frequently, however, it is more or less acrid. As the disease advances, the discharge becomes, perhaps, entirely suppressed. No secretion, perhaps, takes place; but, as the disease declines, the secretion increases again,—becomes excessively copious, exceedingly viscid,—perhaps offensive; and then, again, it gradually lessens. If the inflammation be not intense, the secretion remains mucous; although it may be altered in its quality,—may be diseased, still it is mucous. If, however, the inflammation be more intense than that, the secretion becomes puriform; and a still higher degree of intensity will give rise to absolute pus,—purulent discharge. All this you see in inflammation of the urethra; where inflammation is far more violent than that which occurs in the nose. The inflammation of catarrh generally produces nothing more than mucus; but the inflammation of severe gonorrhœa is so violent, as to cause the formation of pus. If, however, the inflammation be still more violent

than that which occurs in purulent gonorrhœa, you may not simply have pus produced, but fibrin will be poured out. One of the most violent inflammations of a mucous membrane, is the croup of children; and in that disease, the mucous membrane pours forth fibrin; so that the parts become obstructed, and a tube of new secretion is produced. I have seen the same occur in the urethra; where an individual, in consequence of a violent gonorrhœa, has used strong injections; the result of which was the excitement of a dreadful inflammation. Pus had been secreted before, but now fibrin; and a portion of fibrin was discharged from the urethra, exactly resembling an earth-worm in appearance, except in colour.

Occasionally, when mucous membranes are inflamed, hæmorrhage takes place from them. They become so overloaded with blood, that the vessels allow its escape, and hæmorrhage ensues. This is more particularly the case with inflammation of the mucous membrane of the intestines, and of the urethra. These membranes, I think, more frequently discharge blood when they are inflamed, than any other mucous membranes. Occasionally (but this is a more rare circumstance than the former) inflammation of the mucous membranes induces mortification, or sloughing. This is particularly observed in the throat. Now and then you have ulceration; and this generally occurs in the throat and intestines. It often takes place from the very beginning; and is not at all in proportion to the degree of inflammation. There often appears to be a strong disposition to ulceration. Inflammation of a mucous membrane, frequently degenerates into a state of chronic discharge; so that when the inflammation is over, the part continues to pour forth a quantity of fluid, without pain and without heat. This particularly occurs when a mucous membrane has been inflamed several times; and we especially notice this gleet (as it is termed) from the bronchia and the urethra. The latter is every day seen in young men; and the former in those who are old. Hence we have *catarrhus senilis*,—a gleet; a constant discharge from the mucous membrane of the air-passages, without any inflammation.

If we examine these membranes after death, when they have been inflamed, we find them thicker and softer than natural. If the inflammation should have continued very long, they will frequently become very soft and thin; but, on the other hand, just the reverse is frequently observed. If inflammation have induced softening, you may rub them off with the finger, from the cellular membrane beneath. Sometimes, however, these mucous membranes become indurated. It is no proof, if you find a mucous membrane soft,—as you frequently do in the case of the stomach,—it is no proof that it has been inflamed. I believe that a part will occasionally become softened, without any inflammation;—at least, I know that the softening is frequently out of proportion to any inflammation that has existed. Generally, when a mucous membrane has suffered acute inflammation, it is found to be thicker and softer than natural. It is much

more rare to find it hardened. The usual effect of acute inflammation, is to soften parts; but if, by chance, it should occasion a deposition of fibrin, though it has itself a tendency to induce softening, yet the lymph so poured forth being hard, will cause an appearance of induration. Baron Dupuytren, the eminent French surgeon,* and Dr. Thomson, of Edinburgh, found inflamed arteries softened; and the stomach, the bronchia, and the heart, when inflamed, are continually found soft. This is the more general effect, therefore, of acute inflammation of mucous membranes.

Sometimes, when a mucous membrane has been severely inflamed, you will find it almost black. Through the mere congestion of blood, you will find it look dark, as if it were mortified; but, on handling it, you find it not lacerable, like a mortified part, but still pretty firm and solid, and devoid of fœtor. Great mistakes have been continually made in the inspection of bodies. After inflammation of the intestines, you often find portions of them almost as black as your hat, without any particle of mortification; and frequently such cases have been pronounced, at once, to be mortification of the intestines. Mere congestion of blood will make a mucous membrane almost black; as is seen in the case of the genital organs of rabbits during heat. You will find the error to which I have alluded, pointed out by Dr. Baillie in his "Morbid Anatomy."

It is a general remark that the feverishness,—the *pyrexia* attending the inflammation of a mucous membrane, is comparatively mild. The pulse is generally soft, although quickened; and the more frequent the attacks of inflammation, in any individual mucous membrane, the more mild they are, and the more early and profuse is the discharge.

If the part inflamed be a *serous* membrane,—such as the arachnoid, the pleura, the pericardium, the peritoneum, or the tunica vaginalis, —the pain is for the most part acute, darting, lancinating. The pulse is not soft, as in the case of inflammation of a mucous membrane; but is generally hard, though by no means always. It is a general, but not a *universal* remark, that the pulse is hard. The inflammation causes here, not a secretion of mucus, but a copious effusion of serum; which is sometimes limpid, clear, and of a lemon colour; but is generally turbid; except, perhaps, in inflammation of the head. The serous collection is generally of a yellowish colour, like whey; and sometimes it is puriform;—the fluid, in many portions, resembling pus; although other portions of it may be more like serum. Sometimes, however, absolute pus is produced; so that the pericardium has been seen filled with pus. Not only is serum effused, but fibrin is likewise poured forth; the appearance of which is very various. Sometimes it forms a jelly-like yellowish mass; sometimes minute shreads or flakes are seen swimming about the fluid; and sometimes it forms regular layers, looking like so much skin. These deposits of fibrin, will at length grow vascular; and when vascular, they will adhere to the surrounding serous mem-

* This prince of continental surgeons died since the above was delivered.

brane; and at last become thin again, and in all respects resemble cellular membrane. Hence they have been frequently called *false membranes*. A false membrane is originally nothing more than an effusion of lymph; which has become vascular, and adherent to the surrounding serous membrane from which it has been poured forth; and has then become, in all respects, like cellular membrane.

This effusion is undoubtedly fibrin. Some have thought it to be one thing, and some another; but, in an article contained in the twelfth volume of the "Medico-Chirurgical Transactions," Mr. Dowler shews it to be fibrin. I never had any doubt upon this subject; and many persons coincided with me in opinion. However, Mr. Dowler has brought forward evidence in proof of it. You will find it stated, in Andral's "Pathological Anatomy," that Lassaigne, a French writer, has also ascertained the same circumstance experimentally.

In this deposition of fibrin, you will find two portions;—one solid, and the other fluid. The solid is fibrin itself; but within the various portions of the solid mass, between the layers, (or, more properly speaking, in cells), is found a fluid which is ascertained to be albumen. When these depositions have become adherent, they may be injected from the surrounding parts; but,—as I mentioned with respect to a coagulum of blood, that it has been seen to have vessels of its own, independently of its connexion with the surrounding vessels, (although such vessels become at last connected with those that surround them),—just in the same way these depositions of fibrin will, before they are adherent to the surrounding serous membrane, become vascular. Vessels will form in them; and within them there has even been found pus, while they were still unconnected with the surrounding parts. Andral says that he has distinctly found a fibrinous concretion, unconnected with the surrounding parts, swimming in liquid in a serous cavity; and frequently, even in such as these, he has found pus. It is said that the circulation within these parts is of three kinds. When they are first formed, currents take place in the interstices, through irregular areolæ; in the next place, insulated vessels are found; and, thirdly, these vessels at last become continuous with those of the neighbouring parts. Andral says that each of these stages may exist in different parts of the same fibrin.

I may mention, that when you open a serous membrane which has been inflamed, you will find upon it points, or stars, or patches of vascular redness. In the first degree of inflammation there are merely points; if there be still more inflammation, there are stars; but if there be a still higher degree, and very numerous vessels contain blood, then you have a diffused redness.

When the part inflamed is either the cellular membrane or the substance of organs, (as, for instance, the liver), the pain is fixed;—not diffused, as in the case of a mucous membrane; but fixed and rather acute, though not so acute as in an inflamed serous membrane. It is rather dull, but rather acute, notwithstanding; and even pul-

sating, or throbbing. There is an effusion of serum into the surrounding parts, and at length suppuration takes place in that spot where the inflammation is most intense; and in the midst of lymph an abscess is formed, such as I have previously mentioned. If any tumor be produced, you find it hard; and, of course, when it suppurates it becomes soft, and the pain remits; though, generally, the tension from the collection of matter, keeps up the pain and the other symptoms. When the matter escapes, the part heals by granulation and cicatrization; as I mentioned when speaking of abscesses.

Inflammation of the substance of the viscera, or of any part of the cellular membrane, forming an abscess, rarely ends in gangrene; except that particular form which is called *carbuncle.* The inflammation of the cellular membrane, or substance of the viscera, is called *phlegmon.* When, however, it is near the surface, and has a tendency to produce gangrene, it loses that name, and we call it *carbuncle.* In carbuncle, the cellular membrane will die to such an extent, that surgical aid is necessary, in order to make a very large opening for its escape.

Inflammation of the cellular membrane and of the viscera, is sometimes not insulated, but diffused; and, as I mentioned when speaking of the skin, this is frequently called *erysipelas phlegmonoides*,—provided the skin is also inflamed; or *diffused inflammation of the cellular membrane*, if the skin is not inflamed. This inflammation is occasionally chronic. Nothing is more common than for inflammation of a *mucous* membrane to be chronic; but inflammation of a *cellular* membrane is not so frequently chronic, though sometimes it is; and we observe this especially in the lungs and liver; so that people labour under chronic peripneumonia, and more frequently under chronic hepatitis.

With respect to the fibrous membranes, this name is given to fascia, aponeurosis, tendons and their sheaths, ligaments, and periosteum. If these be inflamed, the disease which commonly exists is rheumatism. You may, of course, have inflammation of any of these parts without rheumatism; but if there be a general tendency to inflammation of these throughout the body, it is called rheumatism. Frequently, however, the inflammation of a single one of these parts is the same disease. In rheumatism, although the pain is obtuse, yet there is a feeling of tension; and gelatinous exudations take place, something like synovia. This form of inflammation rarely runs on to suppuration; still more rarely, if ever, to mortification. The pyrexia may be out of all proportion to the violence of the local inflammation; and, indeed, one character of the disease is the occurrence of profuse sweating. In acute rheumatism, you seldom find profuse sweating to be absent, either at one period of the disease or at another. It generally occurs at the commencement of the affection; at any rate, if the patient be kept at all warm, the tendency to it is sure to shew itself; and the sweats are frequently of so marked a character, that you can be at no loss instantly to discover their

nature. They are usually very sour. This variety of inflammation generally terminates in resolution, or degenerates into the chronic form;—perhaps with a chronic collection of gelatinous matter about the joints, and in the thecæ of tendons.

The peculiarity of this inflammation is, its great tendency to wander;—to *migrate*, as it is said; so that you shall have it now in one joint, and in a few hours in another. Occasionally it is metastatic. It will cease in these particular parts, and inflammation of an internal part will begin;—generally an inflammation of some membrane, either the arachnoid, I believe, or the dura mater;—we cannot say exactly which; but, certainly, more frequently than not, it is the pleura or the pericardium;—the latter, however, more frequently than any other. But it is not by metastasis only, that this internal inflammation takes place; for you will continually see inflammation of the pericardium, or of the pleura, occur in rheumatism, while the affection is going on in the joints, just as violently as before; and frequently this internal inflammation does not take place, till after the rheumatism has been over some time. When the pericardium, for example, has been inflamed, if the person do not die, the pericarditis has a great tendency to become chronic. Disease of the heart is then set up; the substance of the heart itself frequently becomes thickened, or hardened, or softened; the internal membrane of the heart, chiefly about the valves, becomes affected; and you have all the symptoms of a diseased heart. You have organic disease of the heart established. This is by far the most common origin of diseased heart in young persons. Pericarditis is first set up; and this pericarditis is generally connected with rheumatism.

Such are the chief varieties of inflammation occasioned by *structure*. The *sympathies* of the particular part affected, likewise occasion varieties in the general symptoms. You have some symptoms from the sympathies of the *general* structure affected. For example,—if the structure affected be a *serous* membrane, from its sympathies you have a peculiar pulse;—in general, a hard pulse. From another sympathy, when *fibrous* membranes are affected, you have a particular sweating. But, besides these general sympathetic effects,—these effects from a particular structure, you have peculiar sympathetic effects from the *organ* itself, to say nothing of its structure. If the stomach or intestines be inflamed, you have generally a sensation of great weakness and a wiry pulse; but this does not occur as the consequence of an inflammation of the peritoneal coat of the intestines, or any other of their coats;—for then it would take place when a similar structure was inflamed in other parts; but it occurs because the organ affected is the *intestines* or *stomach*. When the kidney is inflamed, you have vomiting, a retraction of the testis of the same side, and various other symptoms; simply because the *kidney* is inflamed. Hence you have a certain set of symptoms in inflammation, from the peculiar sympathy of other organs with the part affected.

There are other varieties also observed. Erysipelas of the head has a great tendency to run to the brain. One can hardly say this is metastasis; because the inflammation frequently still continues violent in the face itself, even after the symptoms of phrenitis come on. Inflammation of the parotid glands, of that peculiar kind said to be contagious, called *mumps*, has a great disposition to occasion sympathetic inflammation of the brain or of the testes. Indeed, when any organ is inflamed, and the inflammation continues any length of time, it is not uncommon for another and a distant organ to become inflamed likewise. This organ is generally either the brain, the lungs, or the alimentary canal;—sometimes, however, (though less frequently) the skin, and sometimes the throat. When a part has been once inflamed, it has a great tendency to fall into inflammation again, from slight causes. You certainly have inflammation of an organ, from sympathy with the particular organ affected; and very frequently when this second inflammation occurs, although it may be very slight, it is attended with very considerable ill effects. The constitution is so much impaired by the first inflammation, that the addition of disease, though slight, in another organ, produces very great danger, and frequently death.

Inflammation is sometimes intermittent, and sometimes absolutely periodical. Inflammation of the eye has been observed to recur at particular periods. It has frequently been observed to be intermittent,—to come on violently every evening, or every other evening, at a certain hour. I have also seen periodical catarrh.

You will have variations of inflammation, according as the constitution is healthy or unhealthy. If the constitution be healthy, the inflammation is more active,—is more rapid; and the terminations, when they occur, are more perfect. When the constitution is in an unhealthy state, the parts inflamed are feeble. There is less activity in the inflammation,—less brightness of colour. The terminations which take place are less perfect; and the secretions of the part are more unhealthy.

You have still farther varieties in the symptoms of inflammation, according to the cause which has produced it; and the inflammation on this account is frequently termed *specific*. For example,—inflammation of the skin, as in small-pox, is induced by a specific cause; and therefore it is called a specific inflammation. Independently of its cause, some inflammations run a peculiar course, and are therefore specific. Such is erysipelas.

I have hitherto been considering *active* inflammation; but inflammation is sometimes also said to be *passive*. If in an inflammation there be but little pain; if the redness be dull; if the heat be but slightly increased, perhaps not at all; if there be more than the usual swelling, and a very abundant secretion;—the inflammation is said to be passive. I have already mentioned, that some persons object to this term; and say that such a set of symptoms as these, are not inflammation; and Andral, to avoid the difficulty, calls all inflammations and congestions *hyperemy*;—the excessive presence of

blood in the part. "Active *hyperemy*," is synonymous with "active *inflammation*;" whereas, if the symptoms be those I have just described,—a dingy colour, flaccidity of the parts, and little or no pain,—then, instead of calling it "passive *inflammation*," (which he says is absurd), he calls it "passive *hyperemy*."

The terms "*acute*" and "*chronic*" apply merely to the *duration* of inflammation; and not to the difference as to whether it is active or passive. An *acute* inflammation may be *passive* from the first. When a person is already weak before the attack of inflammation, or the part has been frequently inflamed before, then at the very outset the inflammation may be of a passive character, although acute. After inflammation has continued for a length of time, it may be still active;—the part may still be hot and painful, and this state may yield only to the remedies of active imflammation. Hence "*active*" and "*passive*," with regard to inflammation, (as with respect to all other diseases), are not synonymous terms with "*acute*" and *chronic*."

You will find inflammation sometimes distinguished into *tonic* and *atonic;* and these terms refer, not to the active or passive condition of the part, but to the powers of the system. If the constitution be strong, the inflammation is called *tonic;* whereas, if the system be in a weak state, the inflammation is called *atonic;* because inflammation is sometimes very violent in the part, and yet there is no power in the system. The activity is all of short duration; the powers are exhausted; and perhaps mortification takes place. The activity,—the violence of inflammation in a part,—is more than commensurate with the powers of the system. If the *part* be in a state of activity, the inflammation is called *active;* but if not, it is called *passive;* whereas, the words "*tonic*" and "*atonic*" refer rather to the powers of the system at large.

Inflammation, when it continues, will sometimes cause an enlargement of parts. It will cause them to increase,—to be over-nourished; and then the occurrence is termed *hypertrophy*,—excessive nourishment. On the other hand, it will sometimes cause them to waste,—to be *undernourished*, if I may so speak; and then it is called *atrophy*. It will occasion them to be indurated, or to be softened; and it will give rise to various transformations; so that a part shall become pretty firm cartilage, or even actual bone. These results of inflammation, are sometimes combined in the same part; so that a part shall be both hypertrophied and atrophied. If a part be compounded of different structures, one structure may increase,—become harder, and thicker than before; while another constituent of the same organ shall waste away; and one part shall become indurated, while another shall become softened; so that you may have hypertrophy and atrophy,—induration and softening, in different structures of the same compound organ. For example,—you frequently see a thickening of the *investing membrane* of an organ, and a wasting of the *substance* of the organ itself: and you will sometimes see a thickening of the cellular membrane, while one of the other structures shall

waste away. The retina is sometimes found in a state of atrophy, while other portions of the eye are excessively thick, or indurated to the consistence of cartilage. Acute inflammation more frequently, as I have already said, causes softening than hardening; and wasting rather follows acute inflammation than chronic; except when the chronic form induces such over-nourishment of one constituent part of an organ, that another structure wastes. Generally, however, acute inflammation is disposed to produce softening; and if any other change occur, it is rather that of atrophy. Chronic inflammation, on the other hand, chiefly causes parts to become hard, and hypertrophied,—over-nourished,—thickened; and it is this which causes transformations,—causes parts to become cartilage or bone. I do not mean to say that these will not arise without inflammation; but when they are produced by inflammation, it is usually the chronic and not the acute form which gives rise to them.

Besides, however, these alterations of structure, with regard to size and consistency,—and these changes to a new structure, but still a structure which exists in the body,—you will find parts which have been inflamed acquire a perfectly new character, and form a structure unknown to the healthy body. If the changes of structure be merely to bone, or cartilage,—structures which exist naturally in some parts of the body,—then the formation is called *analogous*;—that is to say, it is analogous to a structure of the body; but if the change of structure produced do not naturally exist in the body, then it is called *non-analogous*. The same occurrence takes place, with respect to the fluids which are poured forth in inflammation. Serum, fibrin, and mucus, which are occasionally poured forth in an increased quantity in inflammation, are analogous to fluids which exist in the body naturally; but that is not the case with pus, and consequently it is non-analogous. You therefore see that, in the case both of the fluids and the solids, the results of inflammation are similar;—the productions may be analogous to those which occur in the body, or they may be non-analogous.

Now it is to be remembered, that these various changes of size (hypertrophy and atrophy),—of consistency (induration and softening);—as also these transformations; the occurrence of hæmorrhage, the occurrence of effusion (dropsy), the occurrence of a discharge from a mucous membrane (a gleet); and perhaps adhesion, ulceration, and mortification;—nay, some say, even suppuration;—may all take place without any inflammation. They are continually the effect of inflammation; but certainly most of them do sometimes occur, without our being able to discover that any inflammation existed. In the case of hemorrhage, though it is frequently the result of an active inflammation, and generally too in a mucous membrane, yet it is often passive; and is poured forth without either pain, heat, swelling, or general irritation;—nay, it is frequently poured forth without any fulness at all, to be discovered in the vessels of the part. I have opened persons who have died from hemorrhage; in whom there was no collection of blood to be found in the parts which

afforded the hemorrhage. While every part of the body, from the head to the foot, was perfectly pale, yet there was hemorrhage from time to time until death ensued; and it must have come from small vessels, because no large vessels could be discovered to be ruptured. Certainly you will have chronic hydro-thorax and ascites, without any inflammation of the serous membrane;—no pleuritis,—no peritonitis. With respect to mucous membranes, you continually see a gleet, without the occurrence of any one symptom of inflammation. It is even thought by some, that suppuration of the lungs will take place without inflammation;—that where a single vomica of mere tubercular matter has been generated, and suppuration has taken place, there has often been no previous inflammation. Whether that is correct, I will not say; but certainly large adhesions continually occur in the pleura, in persons who have no recollection of having been the subjects of inflammation within the chest. Occasionally portions of fibrin are spit up from the bronchial tubes, without a person having, beforehand, suspected the slightest inflammatory state of those parts. Ulceration is thought, by some surgeons, to occur occasionally in the cartilages of joints, without inflammation; and certainly ulceration will now and then take place in the skin and throat, with little or no inflammation. Such ulceration is continually seen in scurvy. Ulcerated, like softened, mucous membranes, are sometimes quite pale. Mortification will occur every day without inflammation. Instances of this are seen in the lungs; and more rarely in other viscera.

When the chief vessel of a part is obstructed by a ligature, this will frequently produce mortification of those parts below, to which the ramifications of the obstructed blood-vessel are distributed. Sometimes the legs will mortify from bad food; and the most common kind which produces this effect, is diseased grain. Spurred rye, or *ergot of rye*, (as it is called), causes mortification, I believe, in all animals; though the quantity requisite for that purpose varies in different species. If an animal live upon it, there is sometimes a reddish fluid observed to ooze from the nostrils; sometimes there is violent pain of the extremities; and sometimes there is also heat and redness,—actual inflammation; and then gangrene takes place. Frequently, however, it does not cause heat and redness, but a withering of the part; which will dry, and look like the extremities of a mummy. The extremities become cold, dry, and shrivelled; and at the same time, diarrhœa, vertigo, convulsions, and delirium, very frequently take place. Internal inflammation is frequently induced in the alimentary canal; but the extremities generally mortify, and look as I have stated. I need not say that this state is not contagious. It is common in France, and formerly it was common in England; and when the latter was the case, the cause appeared to be diseased wheat.

I believe that other grain, diseased in a similar manner, has a similar effect. The ergot of maize in Colombia, is said to act thus;—at least it will cause the hair to fall off,—sometimes the teeth to

drop out; and it frequently induces sudden death. It so happens that brutes are exceedingly fond of it. They will therefore frequently gorge themselves with it, and then die suddenly. It was observed that the hens which ate of it, in Colombia, discharged their eggs prematurely,—before the shell was formed; and it is imagined (at any rate, it is possible) that the fact of its occasioning the abortion of eggs in hens, led persons to employ it in the case of the human subject, for the purpose of emptying the uterus speedily. I may mention that its peculiar properties appear to be destroyed by cold; for it is found, that if this diseased maize be carried over cold mountains,—over the Paramos, it may afterwards be eaten with impunity. So, at least, it is said.

Mortification will sometimes occur, not from inflammation, but from ossification (it is said) of the minute arteries. Some say that mortification will arise from the ossification of the larger and more distant arteries; but certainly it is generally believed to be sometimes occasioned by the ossification of the minute arteries. Cruveilhier, by artificially inducing a similarly obstructed state, produced the same effect. He injected mercury into the arteries, so as to fill the capillary vessels with it; and when an obstruction was thus produced, mortification was the consequence.

It is possible, that, when extreme congestion of blood takes place in parts, and continues for a length of time, it may produce mortification, in some measure, from the blood coagulating in the minute vessels. Nothing is more likely than this.

The mortification which arises from obstruction in the minute vessels, induced by ossification of the minute arteries, most frequently takes place in males; and especially in the old and voluptuous. Generally the gangrene is dry;—the part shrivels up, and this state is preceded by very great pain. There are two varieties of dry gangrene;—the *pale* and the *black*. Some believe that mortification never occurs without inflammation; but I do not think this is proved. Many things are asserted in medicine without, I think, sufficient proof; and occasion a great deal of trouble to those who follow the asserters, by making it necessary for them to prove that the assertions are not true. I do not mean to apply this remark to the case before us; because we have here only an *opinion;* but what I complain of is too common an occurrence. I do not know that it is proved, that mortification is always preceded or accompanied by inflammation; but if it be, still the mortification is often not by any means in proportion to the inflammation. You see the severest mortification, with the slightest inflammation, or none at all; and you see the most intense inflammation, without inducing mortification. Some inflammations have a great tendency to end in mortification. The inflammation of glanders, in the human subject, though not more intense than many other inflammations of the face, nevertheless has a great tendency to induce mortification.

With respect, now, to all the effects of inflammation, and those changes which, though they frequently are its effects, yet sometimes

appear not to be exactly so,—I may mention that induration is generally the result of slow inflammation; but that softening is continually seen without any signs of inflammation at all. Hypertrophy,—over-nourishment,—like induration, is, I believe, generally the result of slow inflammation; but atrophy,—the wasting of a part,—is frequently seen without inflammation. I may mention that in phthisis, the heart is usually small, flabby, and perhaps shrivelled; though not previously inflamed. The transformations of one structure into another structure, natural to the body, though not to the individual part, are certainly more frequently the result of inflammation than not; but the new formations,—those which are not analogous to anything already existing in the body,—are far more frequently not the result of inflammation. It continually happens that there is not a vestige of inflammation to be found during their production. They appear to be alterations of action, rather than the result of an actual inflammation. The part is entirely altered, and a new product is formed; but that is all. It does not appear to be the result of inflammation. When inflammation does accompany those new formations, which are called *non-analogous*, (such as encephaloid disease, or cancer), it is often only an accompaniment, and not their cause. Sometimes it is only the *predisposing* cause. Inflammation throws a part into a predisposition to disease; and then a fresh disease is set up. That these things are not the result, at any rate, of mere inflammation, is shown by the fact, that ten times more inflammation continually occurs, without such effects being induced. If there be inflammation which goes on *pari passu*, still you are not justified in saying that they are the result of inflammation; and in these affections, if you employ the most vigorous antiphlogistic measures, in the most persevering manner, still you do not cure the disease; you scarcely control it, or not at all. The tendency to the morbid process, is continued; and the disposition to it would often appear to excite the inflammation;—that is, the inflammation appears to be the consequence of the disposition to the disease; and not the disposition to be the result of the inflammation. Indeed, inflammation, in many cases, is only the ultimate effect. The new formations irritate the part so much, that inflammation is excited, and an attempt is made by nature to discharge the formation. In this way schirrus has sometimes been completely separated, by nature, from the body.

The existence in the lungs of tubercles (which are new formations,—not analogous to anything in the body) cannot be the result of mere inflammation; because you see inflammation occurring every day without them; and you see them produced without signs of inflammation. Occasionally, people who are disposed to this disease will, by having the lungs thrown into an unhealthy state by inflammation, become the subjects of tubercles from that time; because anything which throws the body out of health, gives a predisposition to disease of some kind or other; or if there be a predisposition, it is increased, and the new disease is excited. If you feed a rabbit

badly, keep it in a damp place, and in the dark, so that it has a deficient quantity of light and heat, together with unwholesome food, it may become the subject of tubercles. A new depraved secretion takes place; but this is not the result of inflammation. If you were to give an animal stimulants, you might produce an inflammatory state of the whole body, or of any organ; but you would not induce tubercles. The attempt to explain every thing by inflammation, certainly appears to me an absurdity; and I am happy to find my opinions on this subject coincide with those of Andral; who (in his "Morbid Anatomy") argues successfully, in opposition to Broussais, that inflammation is not always the cause of tubercles; that it occurs continually without inflammation; and that when it does occur as the consequence of inflammation, it is not so much the result of the inflammation itself, as of the part being thrown out of health, and thus easily becoming the victim of the predisposition to tubercles. These are all the observations that I have thought it necessary to make, respecting the symptoms and effects of inflammation. I shall hereafter speak of changes of structure in general.

I shall now consider the *causes* of inflammation; commencing with the *remote;* and of the remote causes, the *predisposing*, of course, come first to be considered. The first circumstance predisposing to inflammation, is the sanguineous temperament; and the next may be considered high health. In the sanguineous temperament, there is generally a great quantity of blood; at any rate there is a large quantity in the minute vessels; so that the blood—the pure blood itself—circulates to a great extent throughout. The body is readily flushed; vessels, which should not, readily receive blood; and the circulation is full and rapid. I need not say that high health must have the same effect. A person in a high state of health, has a florid colour. There is an increased quantity of blood circulating throughout the body, and to a greater extent than in other temperaments. Besides these two general circumstances of the body, the same occurrence may take place locally. There may be a local sanguineous fulness,—a local fulness of blood; and that may predispose a part to inflammation. The face is certainly more supplied with blood, than any other portion of the surface of the body; and consequently when exanthematic affections (such as measles and small-pox) take place, most of them affect the face, sooner than any other part of the surface; and the inflammation which occurs there is severer. The same thing will occur from a particular period of life. In children the circulation appears most vigorous in the head. What is called "determination of blood to the head," takes place;—all that is meant by which term being, that more blood proportionately is circulating there than in other parts. In youth, the greatest determination is towards the chest; and in the middle period of life and afterwards, it is in the abdomen. Hence children are particularly disposed to hydrocephalus,—to inflammation of the arachnoid membrane of the brain,—to other cerebral affections; and are continually having fits,—continually having affections of the head;

and, consequently, a large number of children die of acute diseases of the head. Hence, too, children are particularly subject to epistaxis. Persons in youth,—those who have passed the period of childhood, are certainly more subject to all affections of the chest,—to all thoracic inflammations, and to inflammatory spitting of blood. It is adults, particularly, who have inflammation of the stomach and intestines, both acute and chronic;—especially chronic inflammation of the stomach and of the liver;—indeed, inflammation, and congestion, and structural changes of all the abdominal organs.

Seasons and climates will operate in the same way, by exciting either general or local fulness. Pulmonary inflammation is more common in cold climates, and likewise in the winter and spring; whereas in hot climates, and in the autumnal season of temperate climates, hepatic inflammation is most common.

Occasionally a part will acquire an increased excitability from a previous injury; and this is remarkably shown in the head. If a person have once had a severe injury of the head, he may afterwards suffer from a slight cause;—a cause which scarcely would have disturbed him before. I saw a person who had had a fracture of the skull; and for many years afterwards he would become completely delirious, on taking a glass of spirits. This is an occurrence, indeed, that I have frequently seen. I very well recollect the case of a man, who laboured under rheumatism of different parts of the body, and among others of the scalp; but he had suffered severe fracture of the skull some years before; and the mere excitement of the external part of the head, was sufficient to excite it internally; so that he had violent delirium from mere trifling rheumatism of the scalp. Previous inflammation from any cause, disposes a part to be inflamed again. Various causes, of an opposite tendency, will also have the same effect. Bad air, copious evacuations, bad food, depression of mind, fatigue of body, fatigue of mind, the frequent exhibition of mercury, an exhausting climate, and previous disease of any kind, will also dispose to inflammation. While all these predisposing causes, however, induce inflammation, its character differs totally according to the nature of the cause. The inflammation induced by the first kind of causes I mentioned, is active and tonic; whereas the inflammation disposed to by bad food, bad air, depression of mind, and so on, is either passive or atonic;—the inflammation itself is of a passive character; or there is not sufficient power in the system to carry it on,—to get the patient well through it, or to produce a healthy secretion of pus, if pus be produced. Hence the character of the inflammation varies, according as the predisposing cause is one which gives strength, high health, and excitement; or one which destroys health and strength, and gives a tendency only to an unhealthy excitement.

Some of these latter causes, such as the defect of heat and of food, act as predisposing causes to inflammation, without producing any debility, or any atonic character of the inflammation. If a part be exposed to cold, it becomes more affected afterwards by a given

degree of heat. If a person be deprived of food, then, when a small quantity of food is given him, (though of the weakest character), it will produce an excitement which only strong food and a large quantity would have produced before; and therefore some of these predisposing causes,—a defect of heat and a defect of food,—may act also by rendering the part more liable to be affected by stimulants; for stimulants act according to circumstances that went before them. According to the first, so is the second; and all that is requisite is, for there to be a great disproportion between the two. It is no matter whether the first is very defective, or the second is very great; for the effect is in proportion to their *relative* intensity; and therefore parts that have been exposed to cold, become violently inflamed if exposed to a moderate heat; and a person who has been nearly starved previously, has been known to become delirious, merely on taking a little veal broth. Many of these causes, however, produce a cachectic state of the constitution; and then inflammation, if it occur, is of a corresponding character.

With respect to the exciting causes, we may mention, in the first place, a local stimulus; be that stimulus mechanical, or chemical, or what is *properly* called a stimulus;—a stimulus independent of mechanical or chemical qualities; such as alcohol. The effect of all stimuli (as I have just now said) is not dependent upon their positive degree of force; but upon the difference between these stimuli, and the strength of those which preceded them. Every body knows the danger of going from cold to intense heat.

Besides local stimuli, (whether mechanical, chemical, or true stimulants), the depression of stimulation in one part, will cause an inflammation in another. From having the excitement in the feet exceedingly depressed, by a person getting wet through, and sitting with wet shoes, there will be such increased activity at a distant part, that inflammation may occur; so that many persons always have a sore throat, or inflammation of the chest or eyes, if they get wet through, or have wet feet. This application of cold,—depressing the action of one part, and thus producing an excitement in another,—depends very much for its effect upon the previous excitement. If the feet, for example, have been already hot;—if they have been heated, and are in a state of perspiration,—then the application of cold produces so great a depression, that the inflammation of the throat, for example, or the lungs, will be so much the greater. Cold, within certain limits, is found to be more injurious in producing distant inflammation, the more partially it is applied; but cold will itself, I believe, directly induce inflammation, exactly as great heat will do. When we are exposed to cold air,—when exceedingly cold air is passing through the nostrils, the nose will "run;" and it has been found experimentally that cold will really induce the same appearances, in the minute vessels, as heat, and absolute stimuli. Nothing is more common than for rheumatism to be felt in the shoulders, or for an inflammatory pain to be felt in the ear, when cold air is blowing upon these parts.

Thus, it appears, I think, that cold may induce inflammation in three ways:—in the first place, by rendering the body liable to be very much excited by the stimuli that come afterwards;—by depressing the action so much, that when the stimulus of increased temperature is applied, the effect of this is tenfold increased. In the second place, it would appear to act by depressing the action in one part, and thus exciting a correspondent excess of action in another; and thirdly, it appears sometimes to act immediately and directly, by exciting inflammation. I think we have instances of all this. First, when a person goes from the cold into a warm room, you will see his face become very red,—become exceedingly hot; and frequently he will cough violently, and a catarrh will be set up. In the next place, we see persons have inflammation of the eyes, nose, mouth, throat, or chest, from their feet getting wet and cold; and thirdly, we continually see pain in the ear, rheumatism of the shoulders, and the nose "running," when cold air is applied to these very parts.

I believe that sudden refrigeration, and the sudden application of cold after excitement, are more frequent causes of inflammation, than the application of heat after cold. The greater number of cases of inflammation that we meet with, are instances where persons have become suddenly cool, when they were over-heated and fatigued. Perhaps they have got wet, as well as suffered the application of merely cold air. A rigor is frequently induced; and a state arises which is soon followed by inflammation. The effect of sudden refrigeration, therefore, is greater in proportion to the previous excitement; it is also greater if it be partial than if it be general; and it is always greatest if there be much sweating and exhaustion. Sometimes, indeed, fatal results have instantly occurred. Many persons, from taking ice when they have not only been hot, but sweating and exhausted, have dropped down dead. The account of Alexander the Great bathing in the Cydnus, when exceedingly hot and exhausted, after great fatigue, is well known: he nearly lost his life by it. How hot so ever the body may be, there is comparatively little danger, if it be not fatigued. The Russians go from the vapour bath to the snow, and roll in it.

The effect of cold applied to the body, is much increased by damp. Very often persons do not suffer from the application of cold, till dampness is conjoined with it. It may act simply by increasing the cold,—by lowering the temperature still more; but I cannot help thinking that it injures, to a greater extent than this will explain;—that it is injurious out of proportion to the greater diminution of temperature, which the dampness occasions. Many persons are not so strong, by any means, in damp weather. It is possible that it may act by conveying the electricity away in too great a quantity. In dry weather we are all active and vigorous; but in damp weather there certainly is a degree of languor,—an inaptitude for action, both of body and of mind, which most persons notice.

The effect of cold upon the body, is much increased by sleep.

In sleep the powers of the body are less; the pulse is slower; the heat is not so high; and all noxious agents are less withstood. It is a common remark, that if a person go to sleep in a draft, he is sure to catch cold; whereas, if he contrive to keep awake, he is very likely to escape. At any rate, every body knows that if a person fall asleep, when exposed to cold, he is almost sure to suffer. Cold, too, appears to be more dangerous when applied to the back part of the body, than to the front. I imagine there is less power there than in the front. Persons will escape if a little draft come in the face; whereas, if it come to the back of the head or neck, they almost always experience ill effects.

Inflammation is sometimes excited as a *sympathetic* occurrence. But when I say that inflammation is excited by sympathy, I do not *explain* the fact; I merely *express* the fact. When one eye is inflamed, the other, without any external cause, may also become inflamed; and this is called a sympathetic result; it is said to occur by sympathy. It is common, if the head be inflamed in a child, for the abdomen to become likewise inflamed,—either the intestines, stomach, or liver; and *vice versâ*. It is of the highest importance, in practice, to be looking out for this circumstance; or you may be treating only one inflammation, when two exist. If asked the nature of a case of this description, you will be fully justified in saying that is complicated;—that there is inflammation in two parts, though you told the friends with truth at first, that there was inflammation of only one.

Metastasis is also another mode in which inflammation occurs. When inflammation of the parotid glands (in mumps) ceases, the brain will become inflamed; or (what is more common) the testicles, or one testicle; and this inflammation, I may mention, often affords an illustration of atrophy, as the result of inflammation. It is very common, indeed, for a testicle, when it has been inflamed after mumps, to waste away; so that nothing will be left but the membranes. In gout, metastatic inflammation continually occurs. When the gout ceases in an extremity suddenly, it is very common for inflammation, of an apoplectic nature, to take place in the head; or for inflammation to occur in the stomach or intestines.

Occasionally we have inflammation induced, from the introduction into the circulation of unhealthy or acrid matter. If pus, or any other diseased secretion, be absorbed, it is very common to find a deposition of it, at a distance from the part in which it was originally formed. We have a deposition of pus, or of lymph, at a distance;—in the various viscera, in the cellular membrane, or even in the secreting cavities; or we have inflammation and disorganization without deposition. Probably inflammation of the veins takes place; and perhaps the pus formed in them causes such an inflammation in distant parts, that new pus, lymph, and other things, are there produced. But such is the fact, that if pus, or an acrid secretion, get into the circulation, these results take place; if not distant inflam-

mation, at any rate a deposition of pus,—or lymph, debility, great irritation, and a sallow hue of the countenance.

It has been said, that the *predisposing* causes to disease will sometimes become *exciting*,—merely by their continuance and increase; so that no exciting cause (properly so called) is necessary. This may be the case with regard to fulness of blood. A part may become more and more filled with blood; congestion or determination of blood (whichever it is called) may increase, till at last inflammation occurs; or if it be the head that is affected, a state of apoplexy may be produced, without any actual exciting cause. However, in specific inflammation this cannot be the case. I suppose that all the predisposition in the world would not give a person the small-pox, unless the exciting cause were applied.

Such are the observations which I have thought it necessary to make, respecting the *remote* causes of inflammation. We will now consider the *proximate* cause;—that which is essential to the existence of the disease;—in fact, the actual state of the parts in inflammation. In the first place, I think it is a fact that, in inflammation, blood is found in vessels which are not designed to contain it; blood enters vessels which, in a healthy state, contain no blood; and, in the next place, those vessels which naturally contain blood are enlarged, and contain more blood than they ought to do. John Hunter made an experiment to prove the latter circumstance. He says,—"I froze the ear of a rabbit, and thawed it again. This excited considerable inflammation, increased heat, and considerable thickening of the part. This rabbit was killed when the ear was in the height of inflammation; and the head being injected, the two ears were removed and dried. The uninflamed ear dried clear and transparent; and the vessels were seen distinctly ramifying through the substance; but the inflamed ear dried thicker and more opake; and its *arteries were considerably larger*."

That blood-vessels have undoubtedly a contractile power, is shewn both in the large vessels and in the capillaries. I do not know how the action of the capillaries, or of the arteries, can *contribute* to the circulation in health; but it may *alter* the circulation, according to the larger or smaller size of the vessels,—accordingly as they are constricted or dilated; so that there may be more or less blood in the part itself, and in those parts to which these vessels lead. The whole of our present knowledge upon this subject, together with my own opinions upon it, you will find (like the circumstances attending the coagulation of blood) in a note upon the "Motion of the Blood," in Blumenbach's "Physiology."* I will not, therefore, dwell upon it. But although it is quite certain that the arteries and capillaries have this power of contraction; and although I doubt whether it can assist in *furthering* the circulation, (though it certainly may, and certainly does *alter* it every day), I cannot conceive that this increased action is compatible with increased redness and

* Dr. Elliotson's Translation. See Appendix, No. III.

fulness. I cannot conceive that, in inflammation, when a part is redder and fuller than it should be, there can be increased action;—by which I mean, that the vessels can be at once more constricted and more dilated, than before; for if they were redder at the one moment, they would be paler at the other;—the one would counterbalance the other. But whether there is increased action or not, it would appear, at least, that there is a diminished motion of the blood, in inflamed vessels. There appears to be a retardation of the motion; and such retardation is commensurate with the inflammation. This has been shewn by Vacca, Lubbock, Bichat, Allen, Dr. Wilson Philip, and recently, under the microscope, by Dr. Hastings. Still more recently, Gendrin has confirmed the observations which were made by Drs. Philip, Hastings, and others. They applied mechanical violence, heat, cold, and ammonia; and they perceived, by the microscope, that at first the blood moved more rapidly. There was an increased velocity; and a contraction of the vessels was seen, inducing paleness. This is what we should expect from what is called "increased action." After the increased action,—after the contraction of the vessels, the motion became slower; the course of the blood was retarded; the vessels became dilated; and inflammation appeared. In this they all agreed. If the part were already inflamed, and then a stimulus was applied, this stimulus had the immediate effect of quickening the blood's motion, and constricting the vessels; and then the inflammation ceased. If the stimulus were applied very violently, so as to produce most violent action, and extreme rapidity, of course this lasted a shorter time; and the second stage,—that of slow motion, dilitation of the vessels, and inflammation,—came on sooner. By applying the stimulus very violently, the second stage might be made to come on immediately. It is said, however, by them, that the oil of turpentine differed from all other stimuli, by causing the first stage only;—it was not followed by the second; and if it was applied in the second stage, it always removed it; while common salt, on the contrary, caused instant dilatation,—caused instantly the second stage. It would appear from these experimenters,—who are very numerous, reside in different countries, have succeeded each other, and have each repeated the experiments with a view to ascertain whether his predecessors were correct or not,—it appears from them that, in an inflamed part, the blood moves more slowly; that the vessels are dilated; and that, by applying stimuli, you cause the vessels to contract, and the blood to move more rapidly; and that then the inflammation ceases for a time, till the blood is retarded again, and the vessels dilate. One would not expect that cold would have exactly the same effect as stimuli; but such was found to be the case. We all know that, if parts are cold, they become reddish; as is seen in the nose and cheeks in winter. They grow dark,—more and more red; till at last they become of a mulberry-colour; and congestion sometimes takes place to such an extent, that gangrene occurs.

You will find very excellent information on this subject, in Dr. Hastings's work on "Bronchitis." In the introduction to that work, he treats this subject very fully; and since he published, Gendrin, on the Continent, has repeated the experiments, with precisely the same results.

You will find some objections to these results,—from experiments made by himself,—in Dr. Thomson's work on "Inflammation." By the way, that is a work which every person should read; and not only read, but study carefully. I think it is a much better book to read, on the subject of inflammation, than John Hunter's. But the objections he starts, are fully answered by Dr. Hastings. Dr. Thomson says that you have, in inflammation, increased action and motion; but Dr. Hastings answers, that Dr. Thompson himself, in some cases of inflammation, saw a slower motion; and that he speaks of seeing red globules in the parts where the blood was in rapid motion, and must have made a mistake; because in the blood of parts inflamed, you will not discover red globules at all; for they are mingled together or broken down. Dr. Hastings concludes, therefore, that in the cases in which Dr. Thomson saw rapid motion, there could not be inflammation; but that he saw the state which *precedes* inflammation.

The large vessels going to an inflamed part, are frequently felt to throb. If there be a whitlow upon the finger, the digital artery behind it throbs violently; and in inflammation of the face, the angular artery may be felt doing the same. In the case of headache, the temporal artery is in a similar condition. This, however, is no proof of increased action in them; for the same occurs in an aneurism, or a dilated artery. When an artery is dilated (though weakened), softened, and unable to act as it did before, you will find it throb violently;—simply on account, I presume, of its increased capacity. However, in that kind of inflammation which is called *passive*, and which some say is not real inflammation, but mere congestion, this enlargement of the surrounding vessels is wanting; so that you have not this throbbing of the large vessels.

These appear to be the chief facts ascertained, regarding the state of parts in inflammation; but there are many other particulars. In the height of inflammation, the open extremities of vessels certainly are affected with spasm. They will not pour forth fluid as they did before. When a mucous membrane is inflamed, its secretion will stop. The secretions of a part, at the height of inflammation, cease, or at least are greatly diminished; so that one must suppose that there is a spasmodic and constricted state. Perhaps the word "*spasmodic*" may be objectionable; but a constricted state of the extremities of secreting vessels, appears to exist in inflammation. Far more changes than these, however, take place. The blood is buffed and cupped; it contains more fibrin; and this fibrin is thinner than it ought to be. The blood, in the small vessels, becomes homogeneous,—broken down; the red particles are indistinct; and sometimes flocculi are seen in it, which are not visible in the immediate

surrounding capillaries. When a part is mortified, the blood around it is yellow; its various constituents separate; and it is evidently in a state of disease.

With respect to the symptoms of inflammation, the *redness* is very easily explained, from the existence of blood in vessels that ought not to contain it, and the existence of too much in those which *should* contain it. The *swelling* will arise from the same circumstance; and also from the increased secretion that is going on around. The *pain* will arise from fulness, and from the tension of all the parts. This is produced by the accumulation of blood; and by the excessive secretion around. But the pain will also arise, probably, from an increased degree of sensibility. There is, in every case, pain from fulness and tension; but the pain is felt far more severely, on account of the morbid sensibility. With respect to the *heat*, I presume it arises from the increased momentum of blood in the part;—the increased quantity which is circulating there. If the same quantity of blood were in the part, and motionless, of course the part would grow cold; but as the blood which is in it is far greater than usual, and still moves on so as to come round to the lungs, a greater number of changes giving rise to heat must take place. There is far more blood in the part than there should be; and as heat appears to be connected with the existence of blood which is circulating,—coming round to the lungs and undergoing chemical changes,—in proportion to the quantity of blood circulating, there must be increased temperature. If the blood ceases to circulate, or the circulation becomes languid, so that it does not undergo a regular chemical change, then of course the part becomes cold. Momentum is composed of rapidity and quantity. The rapidity is lessened, but the quantity is greatly increased; so that, on the whole, the momentum is greatly augmented.

The *diagnosis* of inflammation, when the inflamed part is visible during life, or when we make an examination after death, I have already spoken of sufficiently; but if it happen that we have to make a diagnosis, during life, respecting a part which we cannot see, then of course it must be founded upon something else than if the inflammation were visible.

When an invisible part is inflamed, there is almost always pain increased upon *sudden* pressure,—frequently upon the most *gradual* pressure; and there is generally more or less pyrexia or feverishness, or (as some call it) *symptomatic* fever. The pain is often throbbing; and frequently there is a sense of weight and tension. It is, however, to be remembered, that although a part be inflamed, *gradual* pressure may sometimes be borne; and that, on the other hand, very *slight* pressure,—a mere brush of the surface, may cause pain, when there is *no* inflammation. In neuralgia,—when a person is labouring under *tic douloureux*, for instance,—you may sometimes produce the most agonizing pain, by brushing the surface in the slightest possible manner. But that is not the case where there is inflammation. Such a slight touch does not produce such an intense

effect; and, more than that, if a slight touch do produce so great an effect, it is only in inflammation of the skin; and that you can see.

Suppose you are in doubt, notwithstanding the pain is increased by pressure, and that there is pyrexia, the best way always is, if the patient's powers will allow it, to treat it as an inflammation; and you will frequently find that the blood which is drawn away, fully justifies your presumption. You will frequently find that the blood is buffed or cupped, or both; but still, if it be not, and you have strong reason to treat the case as inflammation, you must not suppose that you have less reason to imagine yourself right, *simply* because the blood is not buffed. Generally, however, it will be found buffy, if there is inflammation.

With regard to the *prognosis* of inflammation, you are to consider, on the one hand, the age of the patient, and the evident powers of his constitution; and on the other, the violence of the disease, the degree of disposition to it, and its seat. The danger of the affection depends, on the one hand, on the power which the patient has, from the beginning, of going through it. Much must depend upon his age, and upon the general state of his constitution; and much depends, on the other hand, not only on the intensity of the disease, and its liability to increase, but on its seat. An inflammation, exceedingly violent, in an extremity, might not be half so dangerous as one, less violent, in certain viscera. You are also to calculate upon any idiosyncracy, whether natural or acquired, in the individual. For example, (I believe I have already mentioned the circumstance), I once had a patient, who had merely a rheumatic affection of the external part of the head; but he had previously had his skull fractured; and the irritation without the head, produced sufficient irritation within, for violent delirium to ensue; so that he was in a most violent state of phrenzy. There was no danger at all in this;—it gave way to the ordinary treatment of rheumatism of the external part of the head; but had there not been this idiosyncracy, one would have feared that an inflammation of the brain, of a highly dangerous character, was set up. If the man took a glass of spirits, the same effect, I understand, was always produced. You therefore have to consider whether there is any idiosyncracy or not; for frequently when you are attending a patient for an inflammatory or any other complaint, if he be nervous, you have such a depression of the system, such a quickness of the pulse, such a disturbance of the constitution, as would frighten you if you had not known the patient before.

I now proceed to consider the *treatment* of inflammation; and, first of all, of that which is of an active character.

In the treatment of active inflammation, the first point is to lessen the ordinary stimuli to which the body is subjected, both externally and internally. Excessive action is going on, or there is excessive activity and excitement; and our business is to lessen all the stimuli which maintain that activity. The *external* stimuli may be diminished by exclusion. In the first place you exclude high tempera-

ture;—you procure a moderate temperature, so that its stimulus may act as little as possible. In attending to this point, however, great care must be taken not to allow the temperature to fall too low; for if you chill a patient labouring under inflammation, you not only cause great discomfort, but you most likely increase the affection. By diminishing the circulation in healthy parts too much, it is possible that you may increase the activity of those which are inflamed; so that in lessening the temperature around a patient, it is necessary to diminish it only so far as is comfortable to him.

However, with respect to the part itself, the temperature there is of course too high; and to that part you may apply cold. Cold may be applied by means of plain water; which generally answers as well as anything that can be used, if it be continually renewed; but we can procure, of course, a lower degree of cold, if we employ evaporating fluids,—those which evaporate more quickly than water. It is often of great use to employ real ice; and for this purpose a bladder may be half-filled with it, and laid on the head after it has been shaved, or on the front of the chest, or on any other part of the surface that requires it. If you *fill* the bladder, it will not accommodate itself well to the part; but if it be only *half*-filled, it presses down in close apposition with it. If it be the surface itself which is inflamed, and not the interior of the head or chest, it is not well to apply ice in this way; because the pressure would do harm. Indeed, in inflammation of the chest, cold is not applied externally; it is only in cases of hæmorrhage that we have recourse to it. If the surface, then, be inflamed, it is best to apply plain water, or iced water, or evaporating lotions; but in the case of internal inflammation of the head, or hæmorrhage from the lungs, a bladder half-filled with ice, is one of the best things that can be resorted to. In hæmoptysis, of a decidedly inflammatory character, I have never seen the application of ice attended with harm. Some have said that the application of cold, in the case of inflammation within the abdomen, has been of use; but I am not aware that that is the case. Certain inflammatory pains of the head have given way to a stream of cold water applied to it, when nothing else would succeed. By means of a tube, a stream of water has been applied to the head, for many hours in the course of a day; and the complaint has been thus cured, when evaporating lotions did not answer the purpose.

When the surface is abraded, or when it is a mucous membrane that is inflamed,—such as the interior of the mouth, or the conjunctiva of the eyes, (which is very similar to a mucous membrane),—it is generally found of great service to combine, with the cold water, a small portion of the superacetate of lead; but not sufficient to irritate the part. When the surface, however, is not abraded, I doubt whether the employment of lead is more efficacious, than that of plain cold water, or an evaporating lotion.

The very opposite treatment, however, is often equally beneficial. If you apply warmth and moisture together, you often produce as good an effect as if you apply cold. It is only a speculation; but I

imagine that the reason why two such opposite agents produce the same effect, is this:—If you apply cold, you lessen the stimulus; you lessen the heat of the part; you lessen the quantity of blood in all the vessels; and you therefore lessen the tension; whereas, if you apply warmth and moisture, you cause a relaxation of the inflamed part;—you soften the solids, and in that way the tension is taken off. I presume the cold lessens the stretching cause; whereas the moisture allows the part to be easily stretched,—to give way to the distending fluids. Perhaps the warmth and the moisture applied to the surface, may relax the ends of the vessels, cause a free perspiration, and in that way ease the parts. Such, however, is the fact;—that one patient will be as much relieved by warm applications, as another will by cold. I have myself frequently suffered violent external inflammations; and one part of the day I have found the greatest relief from iced water, or from a stream of cold water constantly applied: and when that ceased to produce ease, or caused pain, then I have experienced the greatest comfort from the application of warm water and flannels. You will find the feelings of the patient to be the best guide, in the application of these means. I never apply cold when it is uncomfortable. If you once allow the patient to become uncomfortable, you may not only produce general chilliness, but make him ill, and frequently increase the inflammation.

The temperature of the part, however, is not the only thing to be attended to. If you know that the part affected is one greatly influenced by other surrounding stimuli, (as, for example, the head), you should likewise exclude light and noise; and should, in all such cases, prevent conversation,—both of the patient and of others; so that you may keep him as free from stimuli as possible. The exclusion of light is an important point to be attended to, in all affections of the head, and particularly of the brain.

Still pursuing the plan of exclusion, you should give the patient but little food; and even that should be of the most inert kind. In fact, you should starve him without letting him know it;—pursue starvation in disguise. Plain water would be the best thing, in many inflammatory complaints; but you must allow toast and water, or barley-water; otherwise the patient would think you were going to kill him. The object, however, is to give as little food as possible; and that of the least nutritious and least stimulating kind. In consequence of the thirst, a great deal of drink must be taken. This should be cold, unless the patient wish to have it warm; and if the drinks be made acid, they are of course so much the pleasanter. A saline draught is a good thing; but a few ounces will be productive of little benefit. The patient should have a pint, in the course of twenty-four hours, if he has it to do him good.

But although these things are all highly important, the great remedy in this disease, is the loss of blood. That is,—you have not only to *exclude* the *external*, but to *remove* the *internal* stimuli; and the great internal stimulus of the body, is the blood. Blood-letting may be performed any where. The object is to withdraw blood;

and not merely so, but to make as great an impression upon the system, by a given loss of blood, as possible. Hence it is generally good practice to make a large orifice in the vein, (if you open a vein) ; and to make the patient sit up ;—so that he may faint quickly. If the blood be drawn with great rapidity, a far greater effect is produced, than if it be drawn slowly. A large orifice tends to accomplish that object; and if a patient be sitting up, he is far more likely to faint, than if he be lying down. When we are sitting up or standing, the blood finds more difficulty in returning to the heart, and escapes more easily from it; and therefore, if there be causes tending to produce fainting, they are far more likely to occasion it in that posture, than if we are recumbent. If it be an object to spare blood very much, and yet make as great an impression as possible, it is well to have two veins opened at once,—one in each arm ; and to make the patient stand up. The loss of a very few ounces will then produce fainting.

The rule for taking away blood, in general, is not to consider the quantity, but to consider the effect;—to do every thing you can, to occasion a great effect from a given quantity; but while you are doing so, to go on till the pulse sinks, till the patient says he is better, or till an evident improvement takes place. In any of these circumstances, it is well to stop the bleeding, especially if the patient grow faint; lest the depression become too violent. If, however, the faintness go off, and yet the pulse is no better ; or if the patient feels no better; or if, when he has not fainted, but there has been an improvement of the pulse, the pulse falls back into its former state ; or if there have been no faintness,—no improvement of the pulse, but a great improvement in the patient's feelings,—a great diminution of the disease, and yet the pain all returns ;—then, in any of these circumstances, you should let the blood flow again. In general, one never orders a particular quantity of blood to be taken away, in an acute disease; but rather a certain effect to be produced, if possible.

You sometimes find, on bleeding, that the pulse, so far from diminishing, will increase in volume; and so far from becoming slower, will become quicker; and will still retain its firmness. This circumstance may be a very great improvement. There are some diseases in which the pulse is oppressed ;—in which the pulse may be large and firm enough, but seems to have scarcely any activity in it. It is not a fluttering pulse ; but it moves heavily, if I may so speak. In what is commonly called an *oppressed* pulse, there is plenty of volume,—plenty of firmness; but very little impetus. This is often the case in affections of the head. The pulse is frequently, at the same time, very slow; but is not necessarily so. A pulse may be oppressed, and yet not slow ; or there may be a morbid slowness, and yet the pulse may not be oppressed. The one or the other may be the case ; and yet, on bleeding, the pulse will rise. It will be sharper or quicker, or both ; and this is as much to be considered an improvement, as diminished force and frequency in other instances ;

and I would arrest the flow of blood in both cases. I would then wait and see whether things fell back; and if they did,—that is to say, if the pulse became slower, or heavier, but still having sufficient volume,—I would let the blood flow again.

The repetition of bleeding, after an interval of some hours, or of a day, must depend upon the same circumstances. When the pulse becomes quicker or fuller again, or the symptoms become worse, then you should follow the same rules in repeating blood-letting, as you did at the very moment you were bleeding. In violent inflammation there is, in general, more difficulty in making a patient faint, than when the inflammation is less violent, or when there is very little the matter with the patient. I believe it is true that very frequently, in inflammation, a degree of bleeding will not occasion fainting, which in health, or in a state not far from it, would produce syncope.

But although these are the general rules to be observed, it may be necessary to act in the very opposite manner. If a patient be very plethoric, so that it appears necessary to take a large quantity of blood; if it appear that, without copious depletion, you will only knock down the disease for a minute, or an hour or so; and that all the symptoms may return, on account of the great fulness of the system; or if it so happen that the patient is nervous, and thus easily disposed to faint;—in either of these cases, it may be a great point to prevent syncope, before you have withdrawn the quantity of blood you wish; and therefore it may be right to bleed from a moderate orifice, instead of a large one; and to make the patient lie down, instead of sitting up; and if the patient be very nervous, (as is often the case with women), and likely to faint as soon as a few ounces of blood come away,—before you have taken what is sufficient to make an impression upon the disease, then a smelling bottle may be used. If you expect nervous fainting, instead of syncope from the absolute loss of blood;—if it is likely to arise more from emotion of mind, than from the abstraction of blood, you must make a very small orifice; and more than that, you must make the patient lie down; so that you may be able to carry the depletion far enough to make an impression on the system. If fainting occur when you have only taken away one or two ounces, then you are disappointed. You are obliged to cup, or apply leeches, and go fiddle-faddling on for a number of days, when you might have cured the patient in twenty-four hours; and therefore, in cases where it is requisite to prevent syncope, the use of the smelling bottle is proper, as well as a small orifice, and the recumbent posture; whereas, in other cases, all this would be highly improper. When a patient does faint in ordinary bleeding, I need not say that you must not only stop the blood, but lay him down, lest the fainting should become excessive.

Now, though a quick, full, firm, wiry, or jerking pulse, with the symptoms of inflammation, may justify bleeding; yet the absence of any of these states of the pulse, will not forbid bleeding, if the symptoms themselves demand it. If there be no extraordinary

debility of the pulse,—no feebleness of the constitution; if there be neither tender years, nor extreme old age;—if none of these circumstances forbid free bleeding, you may have recourse to it, notwithstanding that the pulse gives you no such indication. The pulse may not *indicate* bleeding; but still it may *justify* bleeding. The pulse (as we have already noticed) has been called by Celsus *res fallacissima*,—the most fallacious of all symptoms; and, if you depend on the pulse alone, you will be led into error. The pulse will give you highly important information; but if there be a sufficiency of other symptoms to point out the nature of the case,—to show that the person is labouring under an inflammatory affection, though the pulse would not lead you to such a conclusion, you must treat the case in *spite* of the pulse;—provided, however, the pulse does not indicate such debility, as would evidently make bleeding improper; or that the constitution and age of the patient do not forbid it. I have known, in the most dangerous cases of peritonitis, —when the patient was obliged to lie upon his back, with his body and even his thighs raised, so as to relax the peritoneum as much as possible; and where the abdomen could scarcely bear the pressure of the bed-clothes;—I have known the pulse scarcely different in volume, or force, from what it was in a state of health. Notwithstanding that the peritoneum is a serous membrane, I have seen the pulse without any great firmness, any wiryness, any jerking state;—without any thing that would lead you to suppose there was disease of this investing membrane. You will continually see females, in a state of pregnancy, with a small pulse;—such as would prevent you from thinking of bleeding, unless there were other symptoms; but from pressing the part affected, you find bleeding indicated; and from attending to the countenance, and looking at the patient, you see that bleeding will be borne. In the cases of peritonitis to which I have just referred, I have seen the blood, after it has been taken away, both buffed and cupped; and the patient has speedily recovered after a loss, perhaps, of forty, fifty, or even sixty ounces. But it is the same with every other symptom. You are to take all the symptoms together, and seldom place your reliance on one alone. Every one is important in itself; but every one has also its *relative* value.

General bleeding is superior to local bleeding. It is speedy, and it is powerful. However local the inflammation,—however remote from the heart, (even in inflammation of the testicle, or of the finger in paronychia, or whitlow), you will find venesection more powerful, and far more quickly productive of an impression upon the disease, than any local bleeding.

I believe that, in affections of the head, venesection in the arm is just as good as arteriotomy. The great point in an acute disease, is simply to get a large quantity of blood from the system in as short a time as possible; and venesection in the arm will generally answer every purpose. At least I have never seen any thing to

make me prefer opening an artery, in a case of inflammation of the head, or inflammation of the eyes.

If a vein cannot be opened, then I would certainly (in any case of dreadfully violent inflammation) open an artery. I suppose it is always safe to open the temporal artery. If you cannot obtain blood from a vein, in a *very* dangerous complaint, instead of troubling the patient with cupping or leeches, I would open the temporal artery. I know that some practitioners have opened the radial artery. But opening the temporal artery is safe; and generally affords as much blood as is required.

I have never myself had occasion to take away more than thirty ounces of blood at a time; except in one instance, in which forty were required to induce syncope; nor do I recollect having occasion to take away more than eighty ounces altogether, in an acute complaint. Of course, I have taken away many hundreds of ounces in *chronic* complaints;—going on with small bleedings for many weeks, or months; but, in very *acute* complaints, I do not recollect taking away more than I have stated. It is right, however, for you to know, that some practitioners have taken away an immense quantity of blood, in acute diseases, in a very short time; and with success. You will find that 150 ounces of blood are said to have been taken away, in inflammation of the lungs, in a few days. In the twelfth volume of the "Medico-Chirurgical Transactions," Dr. Blundell says that Mr. Hensley, a gentleman on whom he could rely, declared that he had taken away, in two cases of inflammation of the lungs, in men, a gallon and a half of blood in five days; and they both recovered. Precisely such a case is mentioned in the "Medical Gazette," for January, 1829. Dr. Badeley speaks of having taken away five quarts in five days, in a case of peripneumonia; and with perfect success. If a case be very obstinate, and will not yield to proper treatment, you see what there is authority for doing: for these are undoubted facts. I do not condemn such practice; but, from the mode of treatment I have generally adopted, I have never had occasion to have recourse to such profuse evacuations.

I may mention among the effects of bleeding, in reference to the buffed and cupped state of the blood, that two Swiss physicians, (Drs. Prevost and Dumas, of Geneva), who have made many experiments on the blood, say that, when bloodletting has been employed, the red particles are found, after a certain interval, to be fewer in number. There is not only a change, in the disappearance of the buffiness; but venesection lessens the number of red particles in the blood. We know, indeed, that when blood is taken away from an individual in health, its effect is to impoverish the blood. It is now, however, ascertained in a scientific manner, that the red particles are diminished; so that in bloodletting you not only diminish the mass of the blood, but you also lessen its stimulating qualities. You lower its quality, while you diminish its quantity.

Besides *general*, it is sometimes necessary, however, to have recourse to *local* bleeding. Now local bleeding is usually employed in proportion to the less violence of the general symptoms; in proportion to the smaller powers of the patient; and in proportion to the existence of mere congestion of blood, rather than of inflammation. If you find the general state of the patient's system not much disturbed; if there be no great excitement or fulness of the pulse; or if you find the patient very weak, and that there is a great accumulation of blood, rather than inflammation; or if the inflammation is rather of a passive or atomic character;—then, in proportion as this state of things prevails, local bleeding is usually preferred to general. But I believe that, in many cases where *local* bleeding is had recourse to, *general* bleeding would be found to answer the same purpose. At any rate, we are never to allow *local* bleeding, which is performed by cupping or leeches, to stand in the way of *general* bleeding. It is frequently a better practice, even if the patient be weak, to bleed *generally* than *locally*;—to set him upright in bed, or to make him stand upright; and from a large orifice to detract four or five ounces of blood, and thus produce a great effect,—than to apply a number of leeches, and drain away perhaps a larger quantity of the vital fluid. I believe that this is often much the better practice of the two; and I am satisfied that general bleeding is continually omitted, when it might be advantageously adopted;—when it would produce a much more decided effect, and give far less trouble.

I believe that local, is often of great use immediately *after* general bleeding. You lessen the load of blood in the part very materially, by immediately applying a large number of leeches, or cupping. I think that this is really good practice. General bleeding frequently answers every purpose; but I think I have seen the symptoms disappear still more speedily if, after making a great impression upon the system, and lessening the force of blood sent to the part, I lessened the quantity contained in the part, by adopting local bleeding.

Local bleeding may be employed to produce general effects. If it be carried very far, you may see a patient become debilitated by it,—become bloodless. You may see a child, during the operation of leeches, become exceedingly faint. You may produce these general effects by local bleeding; but it is usually a slow process, and the effects of local bleeding are often very local. In a case of pain of the head, I have seen leeches applied to only one temple; and that has been relieved while the other has not. Frequently, when a patient has had pain of the head, I have seen the occiput cupped, and relief obtained there, while the front of the head has remained as before; and when leeches have been applied to the front, I have known the occiput continue painful. This certainly is not invariably the case; but you will perpetually find the effects of local bleeding to be very local. I am not contending against local bleeding. I employ it extensively; but I am always anxious that it should never

supersede general bleeding, if the latter be necessary. It is much better to take a decisive line of conduct,—to make a strong impression upon the patient in an acute disease; and then local bleeding, if employed subsequently, has a far greater effect. It is to be remembered that I have been speaking all along of *active* inflammation.

Local bleeding will sometimes succeed best at a distance. I have know chronic inflammatory diseases of the head, that had resisted general bleeding, and local bleeding at or in the neighbourhood of the head, yield to cupping of the hypochondria, or leeches to the anus. Some think highly of bleeding at the foot.

It is certainly a fact, that the detraction of blood from a distant part, is frequently of great utility; and many think of even greater utility than from the immediate seat of the disease. The ancients were very fond of it,—or at least the older writers,—and supposed that a revulsion was produced;—that the blood would immediately rush from the inflamed part, to that from which the depletion was made. I certainly think that, in this country, the circumstance has been by far too much overlooked. I know that I have had cases of inflammation of the head, (as I will mention hereafter), where repeated local bleedings, even till the patient became pale, proved of no avail; but on taking away blood from the sides of the trunk,—far enough from the head,—the relief was perfect, and the patients got well. I have had several cases of this description. There can be no doubt that the application of leeches to the anus, will frequently produce the most decided relief, in affections of the head, and indeed even of the heart. Whether it is more efficacious than local bleeding from these parts themselves, I can scarcely say. I can only say that I know very great benefit, and even perfect relief, has been derived from the practice. Of course, you know that on the Continent this mode is commonly resorted to; but (from delicacy) it is not usual here; nor do I know that it is obsolutely necessary; but I have seen people who have been treated this way abroad, anxious to have it put in practice; and they have certainly found the most decided relief.

When two or three parts are affected at the same time,—as, for instance, the head and stomach,—it is frequently a good practice to take blood from the anus. One can easily imagine why great relief should be obtained from blood being taken away from that part. The veins there go to form the vena portæ; and therefore a great load is taken from the liver,—a great load is taken from the whole venous system; and less blood goes to the heart. As the hæmorrhoidal veins run to assist in forming the vena portæ, and the latter branches through the hepatic veins to the vena cava inferior, far greater relief is sometimes obtained by this means, than by any other, in diseases of the heart, and affections situated within the chest, as well as in great congestion within the head. Still, however, it is easy to make assertions in Medicine and Surgery; and one ought to have a large number of cases registered for comparison,—shewing where relief has been obtained, and where not,—before we draw any conclusions. General assertions are

frequently not to be depended upon. Extensive and accurate observations are necessary, to enable us to say that one mode of treatment is superior to another. I repeat that I do not know that the removal of blood from the anus is decidedly preferable. Whether the same quantity taken from other parts would be more or less beneficial, I cannot say; but certainly I have been frequently surprised, in affections of the head, on seeing the benefit that is derived from taking away blood around the abdomen, or from the anus.

You may frequently diminish the quantity of blood in a part by position; and this is always to be attended to. Position may increase the quantity of blood in a part; and if you can change the position, of course it would be very bad practice to omit doing so. If a patient have inflammation of the foot, it would be madness to allow it to hang down; or if a patient have inflammation of the hand, it would be equally absurd not to have it kept in a sling. But you may often carry these things farther. It is often of use in inflammation of the foot, not merely to have it on a level with the body, but to have it raised; and the same is the case with regard to the hand. In inflammation of the head, it would be absurd to allow the patient to lie with his head low. By attending to these points, though you are not doing any thing which will cure the patient, yet you are doing that which will enable other things to cure him sooner; and you prevent other things from being counteracted.

Next to bleeding, in the way of evacuation, comes purging. This, I need not say, although inferior to bleeding, is highly necessary; for, in the first place, you remove from the interior of the body a quantity of irritating matter,—of fæces, which are almost always diseased, and will most likely become putrid if allowed to remain. You not only remove this, but you are sure to find the secretions themselves diseased; so that in removing the remains of food, you also remove such diseased secretion as would be more or less poisonous, or at least irritating. Besides this, however, you produce an evacuation of liquids from the vessels of the body; and likewise cause a counter-irritation in a part distant from the inflammation. I presume that you do more or less good in the latter way. In all inflammatory affections of the head, chest, and various parts of the body, you find the intestines disposed to become torpid; the excitement occasioned by the inflammation, causes a depression of excitement in the intestines; and if you increase their excitement, so as to bring them into full action, you in a proportionate manner tend to lessen the distant inflammation. Still it is right not to give very stimulating purgatives, lest you should overdo the thing, and increase the general excitement. The point is, to give those which thoroughly empty the intestines of their contents, and subsequently to exhibit such as produce a considerable drain; but at the same time, you must select those which effect the object without great irritation.

I must here remark, that you are not to imagine, because there are very diseased stools produced, that you are to go on purging, for the purpose of bringing such stuff away; for there can be no

doubt whatever that purgatives, especially if acrid, will cause a diseased secretion. If a person in perfect health take an acrid purgative, you will not find his fæces exhibit the healthy character they presented, previously to the purgative being taken. There can be no doubt that many purgatives, especially if they possess any acrimonious quality, will disorder the secretions, and produce a fœtid discharge from the intestines, which would not otherwise take place. It is not necessary that a patient should have diseased secretions, in inflammation and other diseases, before you administer purgatives. It is often, doubtless, not the case; and it is to be remembered that purgatives will have this effect; and that after a time, when the fæces would assume their natural appearance, they may be kept in an unnatural state by the administration of purgatives.

With respect to the *repetition* of purgatives, as also the repetition of bleeding, that must all be regulated by the violence of the disease on the one hand, and the strength of the patient on the other.

With regard to other evacuants, I do not think much of them. Venesection and purging are by far the chief. Sudorifics are of very inferior use; and, for the most part, if you leave the skin alone, and well combat the complaint with other remedies, you will find that the skin will resume its healthy function, and the patient perspire. I seldom take any trouble whatever with the skin, by the administration of either sudorifics or diaphoretics. If you bleed the patient well, starve him, exclude stimuli, and apply such remedies as I shall presently speak of, you may generally neglect the skin as well as the urine. In inflammatory complaints, when the disease is combated, the urine will come round, without any direct means, and so will the skin. At any rate, if you give stimulating sudorifics you do great harm. In regard to the exhibition of antimony, as it is generally exhibited in inflammatory complaints, for the purpose of producing a moderate diaphoresis, you may just as well treat the patient without it. A few drops of Liquor Antimonii Tartarizati,* in a saline draught, cannot do material good in a severe inflammation. So trifling is the power of small doses of this medicine, that I have now patients at St. Thomas's Hospital, who have taken two or three drachms every three hours, to shew how it can be borne, without any sensible effect whatever being produced. The idea of a few drops of antimonial wine producing any serious effect, in inflammation, is absurd. If you will combat the disease with local and general bleeding and purging, you will find that small doses of it are just as well omitted as not; and I never think of saline draughts, or a few drops of antimonial wine, or any other such pretty things, for the purpose of curing inflammation.

There is, however, another plan to be followed, in the treatment of this disease; and that is, to exhibit counter-irritants (or, as they are called, *contra-stimulants*); so as to produce a strong impression upon the system. The chief of these, I believe, are colchicum, digitalis, antimony (in very full doses), and mercury. In violent

* The *Vinum Antimonii Potassio-Tartratis* of the new Pharmacopœia.

inflammation, and indeed in many violent morbid states of the body, all remedial agents are opposed. You may give in fever, or in inflammation, or in insanity, or in spasm, far larger doses of medicine than you could exhibit in health. In the violent pain of tetanus, for instance, you may give an ounce of laudanum. Some say they have given, in inflammation, an ounce of digitalis in twenty-four hours. I never did; nor have I given a scruple, or half a drachm, of the powder, in the same time. It is certain, however, that in this disease you may give a far larger quantity than you could in health; and it may be laid down as a general rule, that all agents are resisted. Certainly that is the case with mercury; of which you may give a quantity which, in the same individual in a state of health, would induce the most violent ptyalism, and cause all the teeth to drop out. You see that, in violent inflammation, the effect of bleeding on the heart is resisted. The system is in a new state; and many things will not produce that effect, which they would if it were in its natural condition.

Of the first of the contra-stimulants which I have enumerated, I have not any great experience. I have little or no knowledge of the use of digitalis in inflammatory diseases. I know that some say they can cure inflammatory affections with it, unaided by venesection;—so far do some go; but I have really a horror of digitalis. I have seen so many people die suddenly who were taking it, that (whether they died from it or not) it is a medicine of which I am particularly shy; and, knowing the effect of bleeding, together with some other remedies, I have not had recourse to it in any quantity sufficient to control the circulation. I have exhibited it in the dose of a scruple, or half a drachm of the tincture, three or four times a-day; but I never saw it useful in inflammation; and as I never gave larger doses, I cannot say much of it from my own experience.

As to colchicum, there can be no doubt of its extraordinary powers in active rheumatism and gout. There can be no question that so strong an anti-inflammatory remedy as I suppose colchicum is, will produce sweating, purging, and vomiting; and nausea has a great tendency to lessen inflammation; but I cannot say that I have been so satisfied with it, as to make me trust much to it. With the exception of its employment in gout and rheumatism, its utility has not appeared to me so decisive, as to induce me to exhibit it in preference to mercury.

With respect to antimony, it may be given, it is now well known, in far larger doses than could be imagined. I believe it is now ten years, since I found Pulvis Antimonialis * to be in general a very inert thing. I have seen others give two or three grains three or four times a-day, or five-grain doses at night, to make persons perspire;—ordering them at the same time to take plenty of gruel, to bathe their feet in hot water, and put plenty of clothes on the bed; and if they have sweated profusely, it has been all attributed to the antimony. Seeing these things, I was in doubt as to its powers;

* Called, in the Pharmacopœia of 1836, *Pulvis Antimonii Compositus.*

and I went on till I gave people a drachm, or a drachm and a half, and even two drachms, three times a-day. I was satisfied that its want of effect could not arise from the remedy being resisted; and I therefore gave it to patients labouring under itch. It is well, when a patient is rubbing in sulphur, to give something internally, to gratify his wish to have his blood purified. In the cases to which I am referring, I gave the antimony with no effect. I yesterday stumbled on an old hospital-ticket, (I forgot to bring it with me), in which I prescribed 130 grains three times a-day, without its even producing nausea. He took it to see how far we might go. There was little the matter with the man; and as I found that he took one drachm, and then a drachm and a half, of antimonial powder, three times a-day, with no more effect than would have resulted from "powder of post," I gradually increased the quantity, till he took 130 grains three times a-day. In fact, it is a very uncertain remedy. It contains a great deal of phosphate of lime, and peroxide of antimony; and sometimes it contains nothing else; but if you give it with calomel, you may sometimes produce nausea. I will not say that antimonial powder, as it ought to be, is an inert remedy; but as it is commonly procured, it may be given in the quantity I have just stated, in a large number of cases, with no effect at all.

With respect to Antimonium Tartarizatum,* if it be ever so good, it may be given in large quantities. There are many men now in St. Thomas's Hospital, taking half-ounce doses of antimonial wine, in chronic bronchitis, every four hours, without its producing nausea or any thing else. They said, when first taking it, that it made them sick; but they have not felt so since. Many persons give twenty grains of tartar emetic, in the course of twenty-four hours; and I have given, in inflammatory complaints, two grains every two hours. This induces nausea or vomiting at first, but none afterwards; though, after going on for perhaps a fortnight, the patients may be sick again. I have used it in the way I have stated, but I cannot say that I have been satisfied with it. It has not produced the salutary effect I desired. I dare say you may sometimes save a patient's life with it, by the nausea; but you will not save so many as a good practitioner should try to do; nor do I think that colchicum or digitalis can be depended upon like mercury. I have given colchicum and antimony fair trials; and perhaps I am not contented without great success in inflammation; because I think, if we have fair play, we ought generally to cure it. It is an established truth, however, respecting tartarized antimony, that in inflammatory diseases you may give it in these large quantities; and, although a patient may be made sick at first, yet the sickness will go off, and the remedy be borne. I have, however, generally seen the sickness come on at the end of about a fortnight; and then continue as long as the remedy is continued.

I recommend you, if antimony be employed at all, to give Antimonium Tartarizatum. You should give a quantity requisite for

* Now *Antimonii Potassio-Tartras.*

producing nausea; and you then depress the system. You may give a grain every two or three hours. I have myself given 24 grains in 24 hours. There is a man in St. Thomas's, at this moment, who has incipient phthisis; and there is inflammation of the bronchia; consequently he must be treated by antiphlogistic measures. I fear there are tubercles at the bottom of his complaint; and I am therefore not willing to give him mercury; and he has been taking a grain of tartar emetic, every four hours, without nausea. He has taken it for several days, and yesterday it produced sickness for the first time; in consequence of which the frequency of the dose is now reduced to every six hours.

I have made comparative experiments with antimony and mercury; and I am quite certain that the success of those who employ antimony, in addition to bleeding, is very inferior to what those are accustomed to see who employ mercury. In violent inflammation, I really make it a matter of conscience to employ mercury. If there be great danger, as in violent inflammation of the larynx, (where the patient, if neglected, would be dead in a few hours), I do not hesitate to give ten grains of calomel, every two hours. In this case, if you do not bring your means to operate very speedily, the patient will in a moment be suffocated;—he will fall back in bed from œdema in the glottis, and the case be over. In other instances, however, there is no occasion to be so active. Five grains every four hours will do very well; or, perhaps, rather less. In a case where every moment life appeared to be in danger, I have given as much as a scruple, every two hours. These, however, are extreme cases; and in which you are very sure that, if you do not instantly save the patient's life, he will slip through your fingers. If the mercury begin to run off by the bowels, it is better to unite it with opium. It very soon does this; and you see the necessity of resorting to opium; or, if there be an objection to this remedy, you might give an infusion of catechu, which is one of the most powerful astringents. Of course, astringents in *tinctures* must be injurious in inflammation; and it is better to give an *infusion*. Kino, for what I know, is as good as catechu. If the calomel run off in spite of all you can do, you may exhibit Pilula Hydrargyri; but what is still less likely to do so, is Hydrargyrum cum Creta, with which you may salivate a person very readily. I know you will find it stated, in some books, that salivation cannot be produced by it; but I have salivated hundreds with it. You may give a dose of ten grains, every two or three hours; but I think it has a greater tendency to produce sickness, than any other of the three forms of mercury we have mentioned. You will find more patients become sick who are taking Hydrargyrum cum Creta, than of those who take either calomel or blue pill. It is frequently necessary to unite it with opium.

It may be right, also, to rub in mercury externally,—on the extremities and abdomen,—as quickly as it can be done; for the plan is, as far as I know, to get the mouth sore as quickly as possible. It is right, at every visit, to press upon each gum; and likewise to press

under the lower jaw;—to look at the gums, and smell the breath. The moment you find any symptoms of an affection of the mouth, the remedy should be suspended;—you certainly should not go on. In some cases the affection of the mouth will run beyond what you wish; but it is better now and then to have a violent ptyalism, and save nearly all your patients, than to be over particular,—to take too much precaution, and lose a patient now and then. I can state, as a positive fact, that if bleeding be properly had recourse to, and you can produce a certain degree of affection of the mouth, it is very, very rare indeed, that you will lose a patient with acute inflammation;—unless there be some organic disease, that keeps up the irritation in spite of all you can do; or unless your efforts be counteracted by something wrong in diet, or by some violent emotion of the mind, (which must be more than a match for all the best remedies), or by something unusual.

I would strongly advise you,—nay, I am anxious that you should read Dr. Duncan's "Medical Commentaries," published in 1788. All we know now relative to the use of mercury was known then; though it has been considered that the facts known relative to the use of mercury, in many local inflammations, were first generalized by Dr. Armstrong. The general fact is fully stated by Dr. Hamilton. It is singular how often many of us, who know excellent practical things, do not bring them into use when we come into practice. It is a sort of inertness that is apt to come upon us. The paper to which I refer, is by Dr. Hamilton, of Lynn-Regis. He says that he learned the use of mercury from a navy-surgeon;—that having been informed by a navy-surgeon of the great use of mercury in inflammation, he gave it in pleuritis, in hepatitis, and in all the *itises*; and they all yielded in the most extraordinary manner,—in a way that he never found before by any practice he adopted.

But, with respect to the use of mercury, I beg particularly to state, that it is not to make you employ less bleeding beforehand, or at the time you are exhibiting it. So far as there is occasion for bleeding, it is to be put in practice whether you employ mercury, or any other remedy, or no other remedy at all; but you will find as you go on with bleeding, and as you go on exhibiting mercury, that accordingly as the mercury produces its effect upon the mouth, you have less occasion for bleeding. You should certainly bleed according to the necessity of the case, without considering whether you are giving mercury or not. You will find the necessity of practising bloodletting, to be far less than if you gave no mercury at all; but, if you omit bleeding, mercury will not answer your purpose. Bleeding is the great remedy,—it is the "sheet-anchor;" but the addition of mercury renders far less bleeding necessary;—it causes the bleeding which you do put in practice to be ten times more efficacious. It is necessary to have a clear view upon the subject;—not to imagine, for a moment, that it will become a substitute for bleeding; but that it will lessen the necessity of depletion.

Dr. Armstrong used to say, that bleeding was the right arm, and mercury the left arm of medicine, in the treatment of inflammation. That was an excellent expression of the fact.

If it so happen that the mouth becomes too much affected, I do not think you can employ a better application than the chloride of lime, or of soda. If one ounce of the solution be mixed with six or eight of water, and the patient's mouth washed with this lotion every hour, you will find the ptyalism readily go away. If ulceration have taken place, time must be required for it to heal, and the sore mouth may remain for a long time; but if you be beforehand,—if you employ the chloride before ulceration has occurred,—you will find the soreness from the inflammation of the mouth in general rapidly give way. It should be employed just in sufficient strength to be felt by the patient; but not to produce any pain. It is also to be remembered, that if you maintain a free state of the bowels, there is much less danger of a violent affection of the mouth; and if the mouth become affected, and you open the bowels freely, you generally diminish the affection to a certain extent.*

You will find some cases, in which it would be very wrong to employ opium; for instance, in phrenitis. But it is a practice with some, in cases where it is not specially contra-indicated, to give a full dose of opium, after a copious venesection; and, as far as I know, it is a very good practice. Two or three grains of opium, after venesection to syncope, will frequently prevent the necessity of another bleeding; or, at any rate, will send the patient into a quiet sleep, by which he will be very much refreshed. I never myself saw any harm done by it. I know it is a practice, for the most part, void of danger;—unless there be inflammation of the head. I know that it frequently produces a beneficial, soothing effect; and if the bleeding be likely to cause great irritation in the patient,—if the patient be weak, it may be a highly proper practice. It may be wrong to omit it; because it may prevent that morbid irritability,—that restlessness, which sometimes takes place after bleeding; but still it ought not to take the place of mercury; and I would exhibit the latter, just as though I had not administered the former. The chief point should be to endeavour to knock down the inflammation by free bleeding. If you choose, you may follow that up by the local detraction of blood; and you may give a full dose of opium, as soon as the blood-letting is over; but then you should be as anxious to give mercury, as though that were itself the remedy. Still, however, you will cure many, many cases, without mercury; but if it be an object to save as many patients as you possibly can,—which it undoubtedly is,—you will save more if you employ mercury, than if you do not; and with less loss of blood. Mere bleeding will cure many cases;—mere starvation will cure many cases; but if you give mercury, the exceptions to a cure will be reduced to a very small

* In the Meath Hospital, Dublin, great relief was found to ensue (in cases of excessive ptyalism) from the application of leeches below the angles of the lower jaw.

number indeed. It is better, with respect to opium, to give one full dose, than repeated small doses; for it is found that opium has certainly a stimulating effect over the body. Hence the pulse becomes fuller, and there is thirst. If you give small and repeated doses of opium, you know that both thirst and heat will continue. Dr. W. Philip made experiments illustrative of this subject. He applied, to a denuded brain, a small quantity of opium, and likewise of tobacco; and, on looking at the distant capillary vessels in the extremities, he found them very much excited; but if he applied a large portion of either of these ingredients, he found the action diminished ;—just the opposite effect. Now that demonstration of the operation of large and of small doses, is perfectly in harmony with what we all observe, when we give large and small doses of these remedies. A small quantity of tobacco, for example, will excite feverishness;—will make a person hot the whole of the night, perhaps; and will induce thirst; whereas a considerable quantity will depress the pulse, produce a cold chilly sweat, and pull down all the powers of life. So with respect to opium; if you want its sedative effects, it should be given in one full dose. This would be dangerous, if you did not bleed; but it is perfectly safe if you have depleted the patient copiously in the first instance.

Supposing, however (what is very likely to happen), that you have overdone the thing;—that either yourself, or some person before you, has bled too much;—you then find opium of the greatest use. If too much blood has been lost, and the patient has headache, throbbing of the temples, frequent syncope, deadly faintness, great rapidity of pulse, vertigo, (and this is a state one continually sees, in women who have lost a great deal of blood during or after labour), then the chief remedy is opium. You will find that all these symptoms are much diminished by it. Stimulants (of which ammonia is one of the best) and good nourishment, are highly proper; but the extreme restlessness of the body is very much alleviated by the addition of opium. I need not say that, in such a case as this, if you cannot prevail upon the patient to eat, it is necessary to use the stomach pump; and strong broth should be injected, both into the stomach and the rectum.

But notwithstanding this state of the system, you occasionally find that a local congestion of blood takes place, so as to render it necessary to apply leeches. When the body has lost so much blood, that you are obliged to give ammonia, and nourishment, and opium, you sometimes find such a tightness of the head,—such a degree of heaviness from local congestion, that the application of leeches, or of ice, is indispensably required. These matters, however, cannot be learned minutely by precept. The requisite knowledge can only be acquired by seeing cases;—by practising yourselves; by acquiring a sort of knack in detecting them. You will see cases where, if you were to take away four ounces more blood, you would certainly precipitate the patient into the grave.

Now with respect to all these things,—mercury, colchicum, and

so forth,—they are general counter-irritants; but we have also frequently to put in practice, in the treatment of inflammation, a *local* counter-irritant;—that is to say, to set up a new action in the neighbourhood, or at a distance. I stated that purgatives chiefly act in this way;—not only in removing a quantity of stimulating fæces, but by exciting the action of the intestines, and so far diminishing action elsewhere. But we also employ certain downright stimulants to the surface; and of these, blisters and sinapisms are perhaps the chief.

It is best, I believe, to apply a blister on the surface over the internal part inflamed; as over the right hypochondrium, in inflammation of the liver; and over the thorax, in inflammation of the lungs; but with respect to the head, this is a dangerous practice when there is any active inflammation going on. The application of cold to the head does great good,—infinite good, in inflammation of the brain itself, or of its membranes; but early stimulating the vertex, by a blister, is equally injurious. Nothing can be worse practice, than to apply blisters to the top of the head in phrenitis, in the early stages of the disease; when, however, you have evacuated the patient sufficiently, then such a measure is very proper. But with respect to other parts of the body, it is best to apply blisters immediately over the internal part which is inflamed. If you want to produce an effect rapidly, a mustard-poultice is one of the best things. Some persons have excited a blister, by causing the steam of boiling water to play upon the part; and others by putting boiling water in a jug, with a napkin in it, and suddenly inverting it; but I think a strong mustard-poultice, beat up with hot vinegar,* will produce an effect as speedily as, in general, is to be desired. In young children, ordinary blisters are often a very dangerous thing; and a mustard-poultice, applied to the abdomen, or the back of the head, or the chest, will produce as great an irritation as you desire; and one which you can control, by removing the sinapism, when the child expresses great distress. For a speedy effect, a large mustard-poultice, to cover the whole abdomen or chest, is certainly one of the best things; and it may be taken off at pleasure. It may be borne for ten minutes;—some will bear it an hour: there is no rule for the length of the application.

I may mention with regard to blisters, that some persons have introduced a solution of cantharides, as a substitute for blister-plaster. I have made some pretty extensive trials with it at St. Thomas's, because it appeared to me a desirable thing to be able to produce a blister, by merely varnishing a part with a brush. It is a much cleaner application than that of an offensively smelling plaster, which a patient has to keep in bed with him for twenty-four hours; but it does not well answer the purpose. A blister was produced, but not immediately;—frequently not till the next day; and then, when it

* Some experiments at the Hotel Dieu, since these observations were delivered, have tended to show that the mixture of vinegar rather diminishes, than adds to, the stimulating properties of the mustard.

was going to heal, a fresh blister would arise. I believe that the young gentleman who applied it for me, did so with a brush, very carefully; but I know that, in many instances, a far more violent blister was induced than I desired; and sometimes it would not rise at all; and, in others, there would be blister after blister. Upon the whole I found it very unsatisfactory; and it appeared to me preferable to continue the old practice, of applying a common plaster of cantharides.

Now in that form of inflammation in which there is little power,—in inflammation which is called *atonic*, (where there is not only inflammation, but the body is in a state of debility,) you must employ less evacuants, and trust more to mercury, and also indeed to opium. Where patients are debilitated altogether, I should certainly place great reliance upon mercury (uniting it with opium) for the purpose of lessening the morbid irritability of the system; and should make the evacuant means chiefly local. I should employ local bleeding; or perhaps should frequently trust much more to blisters, or the application of cold, than even to local bleeding. Still, as I mentioned before, it sometimes may be a better practice, even when there is debility, to produce a momentary effect upon the system, by causing fainting;—by taking away a few ounces of blood suddenly, in an upright posture. But, as a general rule, when patients are of very weak constitution, one would trust more to the *local* than to *general* detraction of blood. It may often be necessary, in these cases, while you take away blood locally, or while you are producing syncope by the detraction of a few ounces, to give good nourishment. It is not at all inconsistent, when there is violent inflammation in a part, and little power in the system at large, to lessen the inflammation of the part by local evacuants, and by cold; and yet to support the whole powers of the system by good nourishment;—not perhaps by wine or porter; but by strong beef-tea, by milk, and other nourishing matters, although you do not give stimulants. In some cases it is even necessary to give stimulants; but these are exceptions to a general rule.

These same remarks apply to what is called *passive* inflammation;—that is to say, where a part is not actively inflamed, but rather in a state of congestion; and where the affection is not so much in the constitution, as in the part itself. In inflammation of the throat, where the throat is very much swollen, and of a dingy colour, without active symptoms; and frequently in inflammation of the eyes, where there is more congestion than real active inflammation;—in these cases local means are by far the best. You do not want to produce an impression on the system; you want to unload the part,—to remove the congestion of blood; and therefore local means are exceedingly proper. In such cases even stimulating applications to the parts are useful. They are in a state of atony; and you may, by stimulating applications, and by astringents, frequently remove the unhealthy condition, even better than by mere local evacuations.

It is of the highest importance to make a correct diagnosis between

an active inflammation, and one of an atonic kind, and a state which is hardly, perhaps, to be called inflammation. You will see, after an inflammation has been very active, that the symptoms will continue; but they are very much modified, being attended with great debility,—with great morbid irritability. Here the remedies of inflammation will make bad worse. It is necessary to remember that, in almost every case of inflammation, this stage may arrive; and it is also necessary to remember, that this set of symptoms may happen in the first instance;—bearing so great a resemblance to inflammation, that one not practised in it, might fall into error. Now this particularly occurs in inflammation of the brain. You will find children displaying many of the symptoms of arachnitis,—acute inflammation of the membranes of the brain, (*hydrocephalus acutus*, as it is called), but without that disease; you will see patients labouring under sudden violent delirium, without any inflammation; or at least so little, that debility (inducing morbid irritability) is the prominent feature of the attack; and if, in these cases you were to take away blood, you would most likely destroy life. The mode of distinguishing these cases, is by observing that there is no great pain; or that if there be any pain it is slight and transient; and that, in the next place, the pulse, (although it may be quick), is feeble;—it is not a pulse which, upon careful observation, you would think justified you in resorting to depletory measures. Then, again, the surface is frequently by no means hot; or, if it be hot, it is only so in a transient manner; and the expression of the face altogether is one of weakness. I shall have to speak upon this subject at greater length, when (in the consideration of particular diseases) I come to treat of hydrocephalus and delirium tremens. But in every case of inflammation, it is possible that after you have treated it actively, and subdued its active inflammatory nature, the patient may fall into a state of morbid irritability; and the local symptoms may still exist, though not of an active kind. You can only judge of it by finding that, whatever local symptoms there are, still the pain is not sharp; that, if not gone entirely, it is much reduced; and that the pulse is one which will not justify you in bleeding. There is a degree of feverishness, so that the pulse may be very rapid; but still it is a pulse of irritability;—one that may be almost extinguished by the finger; and you find an expression of feverishness altogether.

In these cases we must no longer go on with evacuant means. They are highly dangerous. It is necessary to administer good nourishment, and even stimulants; and sometimes to give opium. You will find such a case occur, not only after excessive bleeding, but after inflammation has spontaneously subsided. The local symptoms may still continue in this form; and you will sometimes see this state of things at the very commencement. It is particularly seen in children, in spurious hydrocephalus,—if I may so call it; and likewise in delirium tremens (a spurious sort of phrenitis);—not invariably, however; but in many instances. In such cases you will sometimes have even to give wine, and also brandy; but the utmost

care is required; and it is right that you should know, for your own satisfaction in practice, that you will continually meet with cases, in which you cannot satisfy your mind how far active inflammation may still exist; or how far it is a mere case of irritation;—where you may sit anxiously pondering over every circumstance, and be unable after all to determine what course to pursue. Now, in these instances, I should advise a combination of both plans;—that is to say, support the strength, give moderate stimuli with the greatest caution, and anxiously watch their effects; and at the same time employ evacuants locally,—very moderately, lest you should be doing harm on the other side. Adopt, in fact, a mixed plan; which is by no means inconsistent. After the use of any one thing, you should carefully observe the effects; and draw your conclusion from its action. For example, if you think it right still to apply leeches, while you are giving nourishment, whichever appears the more beneficial, you may be satisfied is the more proper; and that must be steadily pursued.

With regard to *chronic* inflammation, its treatment must depend entirely upon the circumstance of its being active or passive. You have little to do with the duration of the complaint. You are not to consider whether it is *acute* or *chronic;* but whether it is *active* or *passive;* and what are the powers of the patient. You will frequently have occasion to bleed in rheumatism, for example, which has existed for a year or two. I have met with cases where, after rheumatism has existed two or three years, the parts have been so hot that it would have been in vain to attempt to cure them, without local bleeding. Of course, when the disease has continued so long, the powers of the patient will seldom be very great; but you are not to consider what is *likely* to be the case, but to ascertain what the patient's powers *really* are;—what is the degree of activity of the disease; and what proportion it bears to the strength of the patient. In these chronic cases, we should make use of chronic remedies. You can apply, not only leeches and cupping-glasses from time to time, but also means which are not serviceable in active inflammation;—that is to say, issues, setons, and caustics,—so as to produce external ulceration. In *acute* inflammation, whatever is done must be done rapidly; but in the *chronic* form, we can apply setons or moxæ;—we can burn the part, or apply caustic and repeated blisters, or keep blisters open,—I do not know which is best; and we can also produce great irritation by the application of tartar emetic, in the form of ointment, or spread upon plaster. Any of these things may be, in the highest degree, serviceable.

Speaking of caustic, I should have mentioned that there is one form of it, which is frequently of great use, even in certain acute inflammations; and that is nitrate of silver. I believe, in certain inflammations of the skin (of which, of course, I shall speak hereafter) the application of lunar caustic, wetted and rubbed on the part, or a strong solution applied with a brush, is frequently of great use. There is sufficient testimony in its favour; but I have not employed it extensively myself. In one form, however, of violent

inflammation of the skin, I have made a circle all round the inflamed part. I have not touched the inflammation itself; but I have touched a certain portion all around, so as to blacken it; and I have seen it put a limit to inflammation, which threatened to spread to a great extent. I think I have seen lives saved in this way;—by inflammation being arrested, which in all probability would have run on to such an extent, that it must have destroyed life. But of this hereafter.

You will remember, therefore, that, in chronic inflammation, you are to consider whether it is active or passive (without any regard to the period of its duration);—whether the powers of the patient are great or small, I mentioned that, in *acute* inflammation, when you find you have carried depletion, both general and local, as far as is admissible, and there is still quickness of pulse, and considerable irritation existing, you have reason to suppose that the case is now one of irritation; and you have to support the patient well; perhaps to give him stimulants, and to quiet him by opium. So, too, in the treatment of *chronic* inflammation;—when you have persevered for a great length of time; and when you find, notwithstanding all you have done, (constant evacuations, constant draining, constant abstinence), that the signs of local inflammation still continue, you have reason to suppose there is something more than mere inflammation; —that it is not simply chronic inflammation you are treating; but that there is organic disease at the bottom, which is keeping up this chronic inflammation. In fact, for the most part, you have no other reason to suppose organic disease, (unless you find enlargement and induration), in chronic inflammation, but that all you do has no effect upon the inflammation;—that the symptoms continue or arise again, notwithstanding your efforts. In disease of the liver, it is impossible, for the most part, to say whether there is mere chronic inflammation, or organic disease, of various descriptions (such as tubercles),—at least, I cannot distinguish between them,—unless you can feel tubercles forming upon its surface, or can feel a considerable enlargement of the organ. But it is only when you find, nothwithstanding all the rational means you can employ,—and employ in full force, that no progress is made against the disease, that you begin to suppose there is something more at the bottom than inflammation.

In this case it is wrong to go on with mercury, or with antiphlogistic measures, to any extent. You will only increase the mischief by such measures. You must support the patient well. For the most part he will sink gradually under his complaint; but you must take care that you do not make him sink, sooner than he otherwise would. In tubercular, and most other organic diseases, by supporting the patient well, tranquillizing him with opium, and attending to the general state of the constitution, you may protract life, and mitigate suffering; although you cannot cure the disease. I must urge the necessity, however, of exercising great care not to adopt the idea that organic disease exists, either too hastily or too late.

If you take it up too hastily, you will not subdue inflammation that might otherwise be subdued; but if you take it up too late, and go on treating the disease as inflammation that may be subdued, you will certainly hasten dissolution, and cause the patient to sink so much the sooner.

In the treatment of what are called "the terminations of inflammation," you will recollect what I stated formerly;—that it does not necessarily happen that the inflammation ceases, because what are called "terminations" take place. They are circumstances which take place; but the inflammation does not cease because these circumstances occur. We must always inquire, when any of these circumstances (such as effusion, suppuration, or mortification) occur, whether inflammation is still present or not; and if it be present, to what extent, and likewise of what character (whether it is active and tonic, or attended by debility); for the same remedies may be necessary, as were requisite in the treatment of mere inflammation, before these "terminations" (as they are improperly denominated) took place. You have to treat the inflammation present accordingly as it is *active*, or more or less *passive;*—accordingly as it is tonic,—attended with strength of constitution; or accordingly as there is no power of constitution, whatever may be the activity of the part itself.

You have also to treat effusion and suppuration as *inflammatory* or *not inflammatory;* because sometimes there is no inflammation. If it so happen that fluid is generated;—whether that circumstance has taken place which in called *effusion;* and which is merely an excessive secretion or collection is a serous membrane; or whether suppuration has taken place, so that matter has collected;—in either case, it may be necessary to let out the fluids; because fresh symptoms may arise from their pressure. This is frequently necessary in a collection of pus; and also in the case of mere effusion, or of fluid collection, in a serous membrane. You may liberate the lungs, and avert impending danger, by allowing the escape of fluid effused in great quantity into the thorax; and some say that you may do the same with respect to the pericardium; but of that I never knew an instance. It sometimes may be necessary in the case of the peritoneum. With respect, however, to pus, the escape of it by art is of the utmost importance; because it is found that it not only injures by its mechanical pressure and distension, but that it frequently causes great mischief to the constitution, by its peculiar properties. If the matter be confined, you will sometimes see the system in a state of great depression, the tongue brown, and the pulse feeble; but on making a free incision, and letting out this fluid, the constitution will rally,—perhaps in the course of a day. When there is a mere collection of serous, or diseased serous fluid, diuretics are frequently very useful; but for the most part, the remedies of inflammation, moderately continued, are among the best means. By still giving mercury, and by continuing low diet, you cause absorption of the fluid to take place; and you do much better than merely cause

absorption of it;—you prevent its increase; and if you can but effect that object, nature, in a large majority of cases, will get rid of it by herself. Among the remedies that answer both purposes, colchicum and digitalis will be found useful. They will perhaps lessen the action that is going on; and keep down the fluid, and also tend to lessen previous effusion. Colchicum, from exciting the kidneys, and also the alimentary canal, is particularly suitable; and so is mercury.

If a discharge have been accomplished by art, or if nature herself have effected a new opening, then you find it necessary to support the constitution well, for the purpose of enabling her to bear this copious discharge; but still it is frequently necessary, at the same time, to adopt more or less of an antiphlogistic regimen,—to give abundant nourishment; but not, indeed, of a stimulating kind.

You may see good reason for not supposing that the necessity of antiphlogistic treatment is over, even in the instance of ulceration and of mortification; which are also called "terminations of inflammation." An ulcer is frequently owing to nothing more than the inflammation around. In the case of a sore nipple, I have seen this over and over again. When the breasts have been so sore, that the mother dreaded the agony of suckling her child, the ulceration has frequently been cured, by merely applying leeches at some little distance from the spot, but still on the breast;—subduing the inflammation there, and afterwards keeping it down. So in the legs;—it is very common for an ulcer to take place in them, and yet not to heal; simply because there is so much inflammation around. Here plasters and ointment are of no use; but if you bleed the patient well, and purge him, you take off the tension and fulness of all the vessels. You subdue the inflammation, and nature then has power of her own to heal the ulcer. It may be just the same with respect to all the terminations of inflammation.

Even in mortification we have to consider whether there is inflammation going on or not; and whether it is attended by tolerable strength of constitution or not. Inflammation may attend mortification after it has begun,—when it is decidedly going on. The inflammation may be really active;—there may be great redness of the part, great pain, and great heat; and there may be tolerable strength of the constitution at large. On the other hand, the inflammation may be more of a passive kind;—the part may be dingy, swollen, and not in much pain; and the strength of the constitution may be in a deplorable condition. It is often necessary, particularly in mortification, to employ local antiphlogistic means, while you support and sustain the system at large. The system itself is in a bad state; and therefore you have to support it with the best of nourishment, and perhaps with wine, or even brandy; whereas the part itself is disposed to run into a state of excitement; and mischief arises from such treatment, unless you prevent the action of the part itself,—perhaps by the application of leeches, and perhaps by that of cold. Occasionally, of course, in mortification, it is wrong to employ soothing measures. You must adopt means of the most stimulating

description; but it is to be remembered that, frequently, the more you stimulate the part, the greater will be the mortification. If there be great irritation, you will find a poultice of carrots or turnips answer a very good purpose. The more you irritate, in many cases, certainly the greater will be the extent of the mortification. If, however, a stimulus be absolutely necessary, then the oil of turpentine, I believe, is the best. Sulphuretted oil is often very good. I have seen the mortification stop, apparently through these applications, when the constitution was well supported; but it is to be remembered, that these things are only to be employed when there is no violence of local inflammation.

It is always an object to prevent the gangrenous parts from injuring those that are not yet in a mortified condition. There can be no doubt that putrid animal substance is, in the highest degree, poisonous; and it is very necessary to prevent it from acting on the living part, and to prevent also the stench which proceeds from it. The latter may be removed, pretty easily, by charcoal-powder put into a fermenting poultice. Stale beer-grounds and yeast are very serviceable; but, above all, I should recommend the chloride of lime, or of soda, to be continually applied. It is necessary, however, in using these applications, to remember that they must be continually applied;—not two or three times a-day; but as one portion of the solution of the chloride dries, so a fresh portion must be employed to counteract the putrescent tendency. You see them, for the most part, inefficiently employed; and, unless you look after nurses and attendants, they will not apply them sufficiently to remove the stench.

In mortification, bark was formerly much praised; and was even thought to be a specific. But that cannot be the case; for sometimes there is great excitement of constitution, requiring antiphlogistic means. At other times, however, in an opposite state of the system, where there is mortification with debility, bark may be of great use, and especially sulphate of quinine; for, in mortification, it is common for the stomach to reject bark. A combination of musk and ammonia, I have frequently seen arrest mortification;—at least apparently. I say *apparently;* because in such a case it is your duty to support the constitution well at the same time; but musk and ammonia united, and given every few hours, have appeared to answer a good purpose; and have been particularly extolled by some practitioners. In nearly all these cases of mortification, opium is useful. There is great general suffering,—great general restlessness; and it is an object to lessen the suffering, and tranquillize the system at large.

It might be supposed that, if you removed the mortified part, you would put a stop to the mortification. On reflection, however, you will see that it would be bad practice. The mortification of a part depends, generally, upon the state of the constitution; and the fresh wound caused by amputating the mortified part, will fall into the same condition; because it is not the *part* that is so much in fault, as the *constitution.* If, however, the mortification depends entirely

upon local circumstances, you may cut off the mortified part with safety. Supposing an artery has been injured to such an extent as to cause its obstruction, and that the part supplied by it dies from the want of blood, the part may be removed without any danger whatever of the disease spreading; because the mortification depends upon a local cause, and not upon the constitution; and the fresh wound will not fall into the same predicament as the mortified part. In almost every case, however, where the mortification does not depend upon a local cause, it is the best practice to wait till nature herself has pointed out that the mortification will not spread; —till a line of separation has begun;—and till you see that the powers of the constitution are sufficient to repair the injury;—that the constitution is not in a condition for the mortification to spread higher up; but that, on the contrary, nature is capable of the healing process. Then you remove the part, and effect the object that nature herself was carrying on; and you do it better. It is of great importance, in the treatment of mortification, to recollect these few particulars.

The observations that I have now made refer to *common* inflammation; but I stated that inflammation may also be *specific;*—and that we term inflammation *specific*, when it runs a very peculiar course, or arises from a peculiar cause. Gout is termed a specific inflammation; because it runs a very extraordinary, and very peculiar course. Small-pox is also an instance of specific inflammation. It not only runs a peculiar course;—beginning on a certain day, and undergoing certain changes on others; but it arises from a special cause, which will produce no other disease. Gonorrhœa, also, is a specific inflammation;—having its origin in a cause that will induce no other disease.

In the treatment of this species of inflammation, we sometimes have prophylactic measures, and can prevent these affections altogether. The disease of small-pox may be prevented, in the majority of instances, by the cow-pock. Then for some of these we have a specific remedy. For itch, which is a specific disease, we have sulphur; for syphilis, we have mercury. For the greater part, however, of these specific inflammations, we have no specific remedy; and even if we had, it would still be of the highest use to treat them on the principles of common inflammation. Where we have certain remedies, as in the case of itch or syphilis, still we must keep in view the remedies of common inflammation; because you must recollect that *specific* is *common* inflammation, with something superadded to it; and by adopting common treatment, in addition to specific, the cure is much accelerated.

Some inflammations are specific at one time, and not at another. There can be no doubt that, in general, ophthalmia is not a contagious disease; but we have every reason to believe that sometimes it is. Even erysipelas has appeared to be contagious. I think I have seen a person die from erysipelas caught in this way;—at any rate, you may see some strong reasons (which I shall notice more parti-

cularly hereafter) for supposing it to be contagious, in a paper published by Dr. Wells, late of St. Thomas's Hospital. Catarrh is sometimes specific. A common "cold" is an instance of common inflammation; but now and then there is an epidemic catarrh, which depends upon some peculiar cause in the atmosphere, and not on the common causes of inflammation. It is a singular fact, that inflammation may be specific at one part of its course, and not at another. Gonorrhœa is an instance of specific inflammation at first; but no doubt, after a time, it ceases to be contagious. When that time arrives we do not know; and therefore it would be bad policy to speculate on the presumption of its having occurred; but I think it is pretty certain that inflammation in the urethra, sufficient to keep up a discharge, will continue long after any contagion is to be feared.

I mentioned that not only the chief essential symptoms of inflammation (such as swelling and pain) would sometimes arise from other causes; but that even other circumstances occurring in the course of inflammation, and in the course of what are called "terminations of inflammation," will not only take place with inflammation, but sometimes without it. Now, among the circumstances which take place in the course of inflammation, or among the terminations of it, are discharges and collections. These may be sometimes mere results of inflammation; or they may be closely connected with inflammation; and sometimes they may occur without any inflammation at all. One of these discharges consists of blood; another is a discharge of mucus; another is not a discharge, but a collection of serous fluid. A discharge of blood is called a *hæmorrhage;* a discharge of mucus is called a *flux*, or a *catarrh*, or a *gleet*, or a *profluvium;* the excessive collection of serous fluid that cannot be discharged, is called a *dropsy*. I shall therefore embrace this opportunity, before I come to the consideration of changes of structure, (which are frequently the result of inflammation, though sometimes not), to consider, in a general way, hæmorrhages, fluxes, (or profluvia), and dropsies. These are frequently the mere result of inflammation; frequently they are closely connected with it, though perhaps not altogether the result of it; frequently they occur without any inflammation being present; and they will frequently continue long after inflammation can be supposed to exist. We shall find it just the same with respect to organic changes. Changes of structure, induration, and softening, are every day the effect of inflammation; but every day they appear not to be so.

HÆMORRHAGE.

Hæmorrhage frequently occurs in inflammation of a mucous membrane,—particularly of the mucous membrane of the intestines and of the urethra, and less frequently in inflammation of the bronchia; but it is a common occurrence to see the most violent inflammation of a mucous membrane, without the escape of a single drop of blood. Why it happens that inflammation of a mucous membrane should, in one case, be attended by hæmorrhage, and in another not, I do

not think we can explain; but, nevertheless, such is the fact. Inflammation of a mucous membrane, may occasion a most profuse discharge of blood;—or, at least, a discharge of blood, whether profuse or not; and this will frequently take place without any violent inflammation. You see that inflammation exists; but you cannot believe it is the sole cause of the hæmorrhage. That the hæmorrhage is inflammatory, is all we feel justified in saying; but it is scarcely the result of an inflammation; and in other cases we may see no symptoms of inflammation at all.

If hæmorrhage occur with signs of inflammation,—with pyrexia; with a pulse full, or hard, or quick; together with pain and heat,—we then call it an *active* hæmorrhage; just as we should call an *inflammation* active, in similar circumstances. The disease is then to be treated simply as inflammation;—we have to treat the inflammation, and the hæmorrhage will subside. We have in general to bleed the patient; and we most likely find the blood buffed and cupped; but not, of course, in every case. We have to purge the patient, as in inflammation; and it is often quite safe and proper to give mercury. We must keep the patient on the same low diet that we do in inflammation, and must apply cold. The latter is particularly useful in such a case.

But, like inflammation, hæmorrhage may be *passive*. There may be no pain, or but little; no heat; no pyrexia; no quickness and fulness of pulse; or, if there be quickness, the pulse is at the same time feeble. There may be, in such a state of things, congestion in a part, or there may not;—that is to say, all the veins may be distended; or the extremities of the vessels only may be pouring forth blood, without any congestion. When hæmorrhage takes place without any symptoms of inflammation,—without pain, without heat, without fulness or quickness of pulse,—the part itself may be in a state of congestion; but, on the other hand, that is sometimes not the case. You may, on opening a patient, find great congestion of all the vessels; while in other cases, you find the most extreme paleness. Where there is a considerable discharge of blood, and no signs of inflammation at all, and symptoms of great fulness of blood in the part, I believe in general it is venous. This sort of hæmorrhage will sometimes be altogether mechanical. There may be an obstruction of some of the leading veins; and the blood may be poured forth, of course, mechanically. An obstruction in the spleen, or in the liver, is a common cause of a discharge of blood from the intestines; but this discharge will sometimes take place without any obstruction; in which case there is a peculiar state of the body, not well understood. For instance,—in typhus fever, in small-pox, in scurvy, and in that peculiar disease called *purpura*, one cannot tell why blood should be poured forth: but it frequently is, and that in great abundance; and yet there may be no signs of inflammation. A solution of continuity in some of the large vessels, of course affords another instance of passive hæmorrhage. There is no inflammation there. You have a mere passive discharge, from the want of me-

chanical resistance; but the want of mechanical resistance will not explain all cases of passive hæmorrhage; because you have cases of the most extreme debility of body, where the patient has no hæmorrhage; and frequently there is hæmorrhage of a passive kind, without inflammation, where there is not such an intense degree of debility.

We must consider that, in these two forms of hæmorrhage, the state is totally different. In *active* hæmorrhage,—that which resembles active inflammation,—the blood is, as it were, *forced* out; whereas, in *passive* hæmorrhage, the blood is *let* out. In active inflammation, there is an intense circulation going on in the part; that is to say, the blood *may* be moving more speedily than natural,—I do not say it *is;* but at any rate there is a *large quantity* of blood *moving* through the part; the action of the heart is strong; and the blood is forced out of the extreme vessels. We have, therefore, only to moderate the force of the blood; and the hæmorrhage for the most part ceases. But in passive inflammation, the force with which the blood is impelled to the part is not increased. There is no great impulse behind; the blood is not driven on; but the extremities of the vessels are so relaxed that the blood escapes,—is let out. We have therefore to employ different means;—not to stop the force of the blood, but to close the open extremities of the vessels as much as possible, and to diminish their diameter; so that the blood may not be thus *let out.* In active inflammation, all the astringents, all the stimulants, and all the compression you could employ, would do little or no good; for there is an active hæmorrhagic tendency. The blood is driven on with great force; and if you merely treat it as inflammation, the hæmorrhage, for the most part, ceases; whereas, in *passive* inflammation, if you were to annihilate the force of the blood from behind, by debilitating measures, you would only increase the mischief;—you would only increase the relaxation of the vessels, and make them more liable to give way than before. In mixed cases it is right to employ both modes. You must always remember that a great number of cases are inflammatory; and that others depend entirely upon relaxation.

It is to be remembered that these two hæmorrhages, active and passive,—just like active and passive inflammation,—run into each other; and it is sometimes difficult to say what treatment we ought to adopt. In fact, we are under the necessity of adopting both plans;—of keeping down activity in the part, while we moderately support the system at large. You have to adopt just the same treatment that I mentioned, as necessary in a doubtful, combined case of active and passive, or tonic and atonic inflammation. Accordingly as the pulse is not quick,—or as it is not full and strong,—or as there is little pain or heat, you may adopt the remedies for passive or atonic inflammation. In proportion as you find the pulse strong or quick, (provided there is still a certain degree of strength of the system), and as you find heat in the part, so you must adopt antiphlogistic measures more vigorously. Local means must sometimes be had

recourse to, for diminishing excitement; while at the same time you support the constitution. But if you find the hæmorrhage is decidedly of a passive character,—so that it is out of the question to think of treating it as inflammatory by bleeding and purging,—you have to trust more to the application of cold to the part itself; and to local, and perhaps even general, astringents.

Cold may be applied to the exterior of the chest, in spitting of blood, with the most perfect safety. I have known phthisical patients to sit up in a chair, with scarcely any thing upon them, and to have ice laid on their chest, without the least suffering being produced, or any unpleasant circumstances resulting. In hæmorrhage from the kidneys also, it is a good practice to apply ice to the loins; and in cases of profuse discharge from the alimentary canal, I should not hesitate to give ice by the mouth and rectum, and to place it on the abdomen.

With respect to internal astringents, I doubt very much the efficacy of nearly all of them, except in the case of hæmorrhage from the alimentary canal; in which case you may employ catechu or kino with great advantage; for here you apply the remedies as locally to the part itself, as if you applied them to the surface of the body, in cases where the latter is diseased. But with respect to those astringents which are intended to be absorbed, and thus to operate on a distant part of the body, I very much doubt their effect; unless they are of a saline character, or are readily absorbed. There can be no question of the efficacy of superacetate of lead. I have proved it to my own satisfaction over and over again. But with regard to vegetable astringents, I very much doubt whether, in a case of profuse hæmoptysis, for instance, you can do good, even if you fill the stomach and intestines with catechu and kino. You may operate, however, on distant parts by means of *metallic* astringents, provided you give those that may be quickly absorbed; and the superacetate of lead is certainly the chief of these. With regard to the dose, one would not imagine beforehand (knowing the ill effects of lead) that you could give the large quantity that really may be borne. Not only may one or two grains be given every six hours, but two or three grains may be exhibited every two or three hours, for some days, with the most perfect impunity. I know you may give a scruple of it in the twenty-four hours, and even more,—nearly half a drachm, with perfect safety, provided you carefully attend to the state of the patient's bowels; and I know that such doses are sometimes necessary, because I have found no effect produced till I have brought the dose up to that point. For a time, there is no occasion to push on the doses so quickly; but if you see the hæmorrhage obstinate, it is then necessary to do so. I have seen a stop put to the hæmorrhage, when the dose had arrived at a certain point; and when the dose was lessened, from a desire of not overdoing it, the hæmorrhage returned. The only inconvenience I have known to occur, has been violent pain of the limbs. It is necessary to attend to the patient's bowels;—to take care that they

are freely opened every day; for it would be madness to give it otherwise. With this precaution, however, it is perfectly right, I believe, in passive hæmorrhage, to give superacetate of lead very freely. The pain of the limbs is of no consequence, if you save life. A patient, on such terms, may well bear pain for some little time after his recovery; but even this may generally be removed by employing the warm bath, once or twice a day, and by the administration of colchicum.

Sulphuric acid is another astringent, which, when taken into the stomach, exerts an influence over a profuse discharge;—not *hæmorrhage*, but profuse *sweating*. I think there can be no doubt that sulphuric acid does check profuse sweating. I think I have seen the same effect result from nitric acid; but sulphuric acid will undoubtedly check the most profuse perspiration.

The application of cold, and of astringents with the cold, and the administration of astringents internally, are among our chief measures in passive hæmorrhage; but you will frequently find the oil of turpentine answer a most excellent purpose. We have all seen it stop profuse hæmorrhage from the nostrils, by being introduced with a plug of lint; and I have seen a similar effect produced, in hæmorrhage from mortified parts. I do not know that it will stop hæmorrhage from internal parts, except the alimentary canal and the kidneys; but it will stop hæmatemesis and melæna;—that is, a discharge of blood from the stomach, upwards or downwards. I have had cases, almost innumerable, illustrating the great utility of this remedy. It so happens that, during the last six months, I have had a large number of such cases,—more than I ever had during the former period of my practice; and oil of turpentine has proved a most efficacious medicine. It should not be exhibited in large doses;—that would do harm, by producing vomiting and purging; which, in such cases, might be fatal to the patient. Twenty drops should be given, every three or four hours. I have also seen it stop hæmorrhage from the kidneys. I have known people take it of their own accord, where I should have been afraid to give it. I have known it taken in active hæmorrhage from the kidneys, and put a stop to it; but where the hæmorrhage was active, I would first treat it as inflammatory; and then, after a time, give oil of turpentine. If the hæmorrhage proceed from a part which you can get at, and you cannot succeed in stopping it by other measures, compression (by means of a ligature, compress, &c.,) may be necessary; or even the application of the actual cautery.

Although it is generally the mucous membranes which pour forth blood, the skin, without any abraison, has been known to do the same. I never saw an instance of the kind, but I have read of bloody sweats; and they occur in persons who have been bitten by some poisonous animals. Curious cases are to be met with in authors, of blood oozing from various parts of the body. There is an account in an American Journal, of a person from whose cheek blood suddenly oozed in considerable quantity, without there being any abrasion.

Ulcers will frequently afford a great quantity of blood; but this especially occurs in women whose menstruation is deficient. There have been some curious instances of the vicarious discharge of bloody fluid. If menstruation be suppressed, it is not uncommon for women to have an ulcer break out on the legs, and for it to bleed once a month; or, if there have been an ulcer before, for it to take on a bleeding character. I have seen hæmorrhage from the chest take place in the same way. Hæmorrhage has taken place once a month; simply because the menses were suppressed.

With respect to predisposing causes, is in young persons that we have active hæmorrhage; and it is in middle age and advanced life, that the passive form generally occurs. Of course, there may be exceptions to this general rule. In children, it usually takes place from the nose; in young adults from the lungs and air-passages; in elderly people chiefly from the abdomen; but they are likewise subject to hæmorrhage within the head, producing apoplexy.

Women,—old, young, and middle aged,—are very subject to hæmorrhage from the stomach; and also to hæmorrhage from the intestines, though in a much less degree than to hæmorrhage from the stomach. This hæmorrhage from the alimentary canal in females, is generally of a passive kind; and will generally bear astringents from the first. It does not require any great extent of bleeding. In the menstruating period of a woman's life, however, the uterus is very subject to hæmorrhage; and this often inflammatory. Many, many cases of menorrhagia,—without pregnancy,—without delivery, have I seen yield presently to one or more bleedings, combined with low diet; whereas all the astringents you could give, would be of no use in this *inflammatory* hæmorrhage,—attended with pain of the loins, heat of body, and quickness of pulse.

Besides this predisposition to hæmorrhage from certain parts, depending upon age, there are others depending upon other circumstances. There is sometimes a constitutional tendency. Certain persons are known to be subject to hæmorrhage from certain parts; and some persons are subject to hæmorrhage in general; so that if they have a tooth out, they will always bleed profusely; or, if they cut their finger, it will continue to bleed for many hours, in spite of means that are used. There is certainly, in many people, an hereditary predisposition to hæmorrhage. In some of these, an extreme thinness of the arteries has been found. After a tooth has been extracted, it has been found necessary, from the profuse hæmorrhage, notwithstanding the actual cautery was employed, to tie the carotid artery; and it has been found that the arteries were even thinner than the veins in other people.

The *exciting* causes of hæmorrhage, are whatever propels the blood violently, either generally or locally; and whatever mechanically accumulates it; such as posture, the application of a ligature, or obstruction in any part. Another exciting cause of hæmorrhage, is the suppression of a discharge, or the sudden cessation of a natural

discharge; such as the entire or occasional suppression of the menses; the suppression of hæmorrhoidal discharge; the suppression of diarrhœa. Indeed, the sudden cessation of a disease to which a patient has been very subject, although not a hæmorrhagic disease, is sometimes attended by hæmorrhage from an internal part. I need not say that a solution of continuity is a common cause of hæmorrhage; and of course it is then of a passive kind.

In hæmorrhage which proceeds from the nose or the lungs, the blood is generally florid; whereas that which comes from the stomach and intestines, is generally of a venous character. But the circumstance of the blood being black, does not necessarily prove that it comes from a vein. I may assume that colour from remaining some time in the stomach or intestines, before it escapes; for blood, if allowed to be perfectly still, and not exposed to the air, will become black. If you tie an artery in two places, the blood between the ligatures becomes venous in its character; and therefore blood discharged from the stomach and intestines, though it *may* be venous, may yet be really arterial;—having become black, merely from staying a considerable time in that situation, previously to its discharge. In apoplexy, the blood effused within the head appears to be venous; but its black colour may be merely from the reason I have just stated.

The uterus is particularly subject to hæmorrhage during pregnancy, and during and after delivery; but then the reason of this is for the most mechanical. Inflammation, if not the cause of menorrhagia in women who are not pregnant, and have not lately been delivered, is, at any rate, a very common attendant circumstance. Menorrhagia that has nothing to do with the impregnation of the womb, is generally of an inflammatory character. An inflammatory state very often produces hæmorrhage from the intestines, and from the urethra.

In the head, and from the lungs, the stomach, and the intestines, we often have hæmorrhage from merely mechanical causes;—from ulceration, or solution of continuity. One cause of hæmorrhage in the head—apoplexy, is brittleness of the vessels, or tenuity of them, or ulceration of the blood-vessels of the head. Hæmorrhage from the lungs often arises from a mere inflammatory state of the bronchia, or of the air-cells. In phthisis we sometimes have hæmorrhage from ulceration; for although nature endeavours to prevent hæmorrhage by forming adhesions, and plugging and contracting arteries, yet sometimes an ulcer will, in phthisical cases, produce hæmorrhage, and sometimes sudden death. With regard to the stomach, hæmorrhage will sometimes occur from ulceration; and death may be the consequence. The same thing will take place in the intestines. There may be an ulceration of even a malignant character; and every now and then profuse hæmorrhage is the consequence. It will also of course come on, in many of these parts, from mechanical violence. It is very common for a person to spit blood after a blow

on the chest, or a fall. It is also common to make bloody urine after a blow upon the loins; and to discharge blood from the intestines after a fall.

It is right to remember that you may not only have profuse hæmorrhage from the mucous membrane of the bronchia, from the stomach, from the intestines, and again from what is nearly a mucous membrane,—the interior of the kidneys, and indeed of the urinary bladder; but that other parts are sometimes the seat of fatal hæmorrhage. I have known hæmorrhage take place into the pericardium, and prove almost instantly fatal; and I have read of cases, occurring in one's own time, of sudden and fatal hæmorrhage into the spinal sheath, without any evident cause. In fatal cases of hæmorrhage into the pericardium, it is said that the heart and the pericardium were found soft. In the case that I saw this was a fact; and, as far as I can ascertain, it was the case in other instances.

When hæmorrhage occurs from a mucous membrane, I believe it is, for the most part, from a large number of minute vessels. It is extraordinary what a profuse hæmorrhage you may have in a very short time,—so as to prove fatal in a minute or two,—without any vessel whatever being found injured. I recollect distinctly having a patient with some pulmonary disease,—phthisis, I believe,—who was sitting up in bed. Suddenly blood came from his mouth; he fell back, and was dead. On opening him we found the stomach filled with blood; there was an immense coagulum, exactly forming a mould of the stomach; but after examining every part of that organ, with the most minute attention, I could not discover the orifice of any vessel whatever. The same has been observed in the case of the pericardium. I think you will find it mentioned, in Dr. Baillie's work on "Morbid Anatomy," that cases have occurred, both in mucous and serous membranes, in which he was unable to find a vessel which appeared to have poured forth blood. The pericardium, for example, will suddenly allow the escape of an enormous quantity of blood.

PROFLUVIA.

Fluxes, catarrhs, or profluvia, form the next class of affections we shall notice. They are precisely similar in principle to hæmorrhage, and occur from those parts which are most frequently the source of the latter;—namely, from the mucous membranes. Fluxes occur particularly from the nose, the bronchia, the intestines, the bladder, the urethra, and the vagina. Those parts which, during inflammation, will frequently pour forth blood, will also, during the same period, pour forth a much increased secretion. In the first instance, their secretion is increased; it afterwards declines, but does not come down to the standard of health; and then, as the inflammation subsides, the secretion becomes excessively abundant. You have, therefore, inflammatory fluxes, or catarrhs, (or whatever name you choose to give them), from the mucous membranes;—exactly as you have inflammatory hæmorrhages; and after all the signs of inflammation

have subsided, you will frequently have these discharges continue. You have, however, another form, where there is no inflammation to be discovered;—where the mucous membrane will pour forth a vast quantity of liquid, for a length of time, and that without any signs of inflammation being present. You have passive fluxes, exactly as you have passive hæmorrhages. The only difference is, that in the one case you have blood, and in the other you have a secretion.

I mentioned that the skin, which almost ranks with mucous membrane, and belongs to the same family of structures, will occasionally, though in very rare cases, pour forth blood. The skin, however, will every day pour forth an immense quantity of its own secretion. The term "*flux*," "*catarrh*," or "*profluvium*," would not be given to a discharge from the skin; but just as the mucous membranes pour forth their discharges in excess, so frequently does the skin. Profuse sweating is analogous to profuse discharges from the mucous membranes. Now we have sufficient proof that excessive discharge from the skin is, more frequently than not, quite devoid of an inflammatory character. In fact, in the highest debility,—in the debility of syncope, in the debility of death,—the skin will secrete most abundantly. Just so it is, undoubtedly, with respect to the mucous membranes. They will secrete most abundantly, without any signs of inflammation at all. It has been imagined that, whenever a mucous membrane secretes in excess, it must be in a state of inflammation. But I think the instance of the skin, which is alluded to by Andral, is sufficient to show that the mucous membranes likewise may be in a similar state, without any inflammation. He says (and it is a happy thought of his) that the skin will secrete in the greatest abundance,—will sweat profusely, without any marks of inflammation. This instance of the skin would enable us to say, *à priori*, that the same thing is possible with respect to the mucous membranes. But I think, *à posteriori*, we can assert that mucous membranes will secrete most abundantly, without inflammation; for after fluxes these membranes are often quite pale after death;—just as they often are after passive hæmorrhage. It appears to me to be a case analogous to that of inflammation itself; and also to that of hæmorrhage. I think you may have an *active* secretion from the mucous membrane, and from the skin (as in acute rheumatism); or you may have it entirely *passive*,—without any mark of inflammation.

The treatment of these fluxes, is precisely the same as the treatment of inflammation or of hæmorrhage. If they be of an active kind, attended with strength of pulse, pyrexia, heat of body, pain of the mucous membrane itself, (the pain which is characteristic of inflammation of a mucous membrane, and is increased by pressure), astringents are altogether improper. At any rate, they are altogether useless; just as they are in active hæmorrhage. It would be just as absurd to attempt to cure these discharges by astringents,—to stop the discharge of gonorrhœa, for example, during the violence of the inflammation, by an astringent injection,—as it would be to

attempt to stop an active hæmorrhage by such means. You have only to lessen the inflammatory state by bleeding, and the discharge will become diminished, or be put into a course of diminution. Perhaps there will be a momentary increase; but it is followed by a diminution, exactly as is the result in an active hæmorrhagic process. When there is no inflammation present, or the inflammation is subsiding, you may apply local means (such as stimulants and astringents) with the greatest advantage; in fact, they then become the proper remedy. If it so happen that no inflammation occur from the very beginning, you may at once apply stimulants and astringents. The instance of the urethra, which is almost before one's eyes, is a good illustration of all that occurs in the various mucous membranes of the body. You will have, in inflammation, an increased secretion; and the inflammation and secretion are only to be subdued by anti-inflammatory measures; but you will have, at last, only a passive discharge; and then anti-inflammatory measures will only increase the mischief, and stimulants are to be resorted to. Sometimes you will have so little inflammation, that you may disregard it from the very first. It is just the same in diarrhœa. In diarrhœa, frequently the best remedy is to bleed the patient, to starve him, to leech the abdomen, to blister him; to give no astringents whatever, but sometimes even moderately to purge him, in order to increase the effect of the treatment; and then the inflammatory state will subside. In other cases you have to give astringents and opiates; and support the patient well; and in that way he recovers. It is the same, too, in bronchitis. In active bronchitis, any remedies which stimulate the air passages, would be highly injurious. You have only to bleed the patient well, to starve him, and to treat him as labouring under inflammation, and the discharge of mucus gradually subsides; whereas if you have, in an old man, a profuse discharge from the bronchia, (forming what is called *catarrhus senilis*), without inflammation, but accompanied with emaciation and paleness, you must give tonics and good nourishment. Such stimulants as snake-root (*Polygala Senega*) answer the purpose best.

DROPSY.

There are other affections which, though they relate to other structures of the body, are in all respects decidedly analogous to fluxes and hæmorrhages; and these are called *dropsies*. A dropsy is not an affection of the *mucous*, but of the *serous* and *cellular* membranes. The fluid here is secreted in such excess, that it is not absorbed proportionately; and as the serous and cellular membranes are closed parts, of course the fluid does not escape, as it does from the mucous membranes; so that instead of a discharge you have a dropsy. That is the sole difference between these two affections. In the one case the effusion escapes, and in the other it does not. These collections take place in the arachnoid, the pleura, the pericardium, the peritoneum, &c.; together with the general cellular membrane of the body. They are very often of an active inflamma-

tory kind; and are to be treated, not by diuretics, but simply by the remedies of inflammation. In the arachnoid, the pleura, and the pericardium, for instance, we every day see dropsy with the most decided inflammation, both acute and chronic. Sometimes, though not so frequently as in the cases just mentioned, we see dropsy in violent inflammation of the abdomen; but very often ascites itself is a decidedly inflammatory disease. We have, in such cases, the usual signs of inflammation of a serous membrane. When the affection is situated in the arachnoid, we have pain of the head, intolerance of light, perhaps squinting, and great quickness of pulse. In inflammatory dropsy of the pleura, we have pain in the side, dyspnœa, and cough. With respect to the pericardium, we have pain in the region of the heart, perhaps a rapid pulse, palpitation, and pain in the heart, darting from that organ in various directions. In the case of the abdomen, the pain is considerable, and is increased on pressure. In fact these are all so many *itises*;—arachnitis, pleuritis, pericarditis, and peritonitis. All these affections tend to induce more or less effusion in every case; but occasionally the effusion is very considerable; and then the word "*dropsy*" is applied to the collection.

The same occurrence takes place in the cellular membrane; and when it is in a state of dropsy,—that is to say, when it contains a preternatural quantity of fluid,—we have a white, soft, and inelastic swelling of the surface; which swelling pits upon pressure. The swelling may sometimes be red; because the skin may become inflamed, as well as the cellular membrane beneath. It sometimes is not soft, but intensely hard, owing to the high degree of inflammation of the cellular membrane, and the fibrinous nature of the effusion. The swelling, of course, is most considerable where gravity directs the fluid in the greatest quantity; so that any part which is dependent, becomes much more swollen in consequence; and you may regulate the swelling, by regulating the posture of the part. What is curious, the swelling will sometimes shift, independently of any particular position. Where a person is lying straight in bed, you will one day see one arm swollen, and the next day the other. Sometimes it will shift to the leg, and then return to the arm again. This is a remarkable circumstance, but one that does occur continually, without any connexion with posture.

When this dropsy of the cellular membrane is inflammatory, it generally occurs in the face, as soon as any where else; and I believe the reason is, because it generally arises from cold, and the cold is as frequently applied to the face as any where else. Usually, when these collections take place, wherever they may be seated, the urine is scanty; but, when the cellular membrane is the seat of the affection, and the affection is of an inflammatory nature, it is very common to see the urine of its natural quantity;—nay, very frequently, I have seen it more than it should be. This inflammatory dropsy of the cellular membrane, more frequently arises from cold and wet, than from any other cause; whereas inflammatory dropsy of the

arachnoid, the pleura, the pericardium, and the peritoneum, may or may not arise from that source. I hardly recollect a case of dropsy of the cellular membrane, of an inflammatory kind, which did not arise from cold and wet; and with it you will usually have inflammation of some internal part; or, if not inflammation, an inflammatory state. If you inquire into the state of the head, you will commonly find that the patient says it is heavy;—perhaps he has violent pain there; but generally it is heavy. If you press the abdomen, you will frequently find tenderness; but, above all, you will find an inflammatory state of the chest. The patient complains either of pain in the chest or of cough; or if you listen to the chest with the naked ear, or employ the stethoscope, you will find either the sonorous or sibilous rattles of the bronchia; or you will find the crepitous rattle of inflammation of the air-cells. In most cases of this inflammatory dropsy, you find inflammation within the chest.

The pulse, in dropsy of the cellular membrane, is frequently hard and full; and it is from the occurrence of the local symptoms of inflammation in the head, chest, or abdomen; from the strength of the pulse; from the suddenness of the occurrence of the dropsy; together with the nature of the causes which have produced it, being such as produce inflammation;—it is from these circumstances that you judge the disease to be of an inflammatory kind. For, although the affection is so decidedly inflammatory, you will not find the cellular membrane tender. It certainly is not painful;—patients, in general, do not complain of pain, when you press the surface of the body. Yet the inflammatory nature of the disease is sufficiently shewn, by the relief experienced on free bleeding, by the buffed and perhaps cupped state of the blood, and by the nature of the causes which produced the disease. The local inflammation that exists within the head, lungs, or abdomen, may generally account for the buffy state of the blood, and the relief that is experienced by bleeding; but when you find the dropsy itself cease so rapidly as it does after bleeding, it is impossible not to believe, that the dropsy itself was of an inflammatory kind.

In some of these cases, the urine is of an albuminous character;—that is to say, it contains serum; and we have been told that our guide for bleeding in dropsy,—that our guide in forming a judgment as to whether it is inflammatory or not,—is to be taken from the appearance of the urine. You will find it stated, in a work published by Dr. Blackall, that the quantity and firmness of the coagulum of the albumen, is usually proportionate to the existence of inflammation, and to the necessity for carrying into practice anti-inflammatory means. The albuminous state of the urine is shewn by heating it;—by putting some in a spoon, and holding it over a candle, till the temperature arrives at the point at which it coagulates. Or it is shewn by adding vinegar to it, and then prussiate of potass; when the albumen will, *after a time*, be precipitated. The former mode will do very well; but the latter is the neatest way. It is necessary to add the vinegar first; or you will not get the pre-

cipitate. Dr. Blackall says, that the firmness of the coagulum is usually proportionate to the marks of inflammation; but he says that, nevertheless, there may be albumen in an *opposite* state,—a state of debility; and in that case bark will cure the disease. His words are,—"A correct guide to venesection may be found in the firmness, copiousness, and early appearance of an albuminous coagulum in the urine; its *limits* in the improvement of the discharge of albumen in the urine, (that is to say, in the diminution of the coagulum), in the state of the blood, and the relief of the other symptoms."

Dr. Blackall has the great merit of pointing out an albuminous state of the urine, in many cases of dropsy; and of shewing that it frequently attends an inflammatory condition; but I am quite satisfied that if you take the state of the urine for your guide, you will practise very badly. It is to be remembered that it it a long time now since Dr. Blackall published his work; and it would be very strange if the practitioners who came after him had not improved our knowledge upon this subject. It is no reflection on any man who writes a work, that some of his opinions are proved to be wrong by those who succeed him. We go on adding experience to experience; and if any man who lived a hundred years ago, had luckily (or unluckily) lived to the present time, and had gone on making observations, he would have corrected much that he advanced at the beginning of his life. There is therefore no discredit in a man being proved wrong, in certain opinions he has advanced, provided a number of things he has asserted are true. I have certainly found it very common for persons to be cured of dropsy by bleeding, although no albumen could be discovered in the urine; while, on the other hand, where there has been albumen in the urine, persons have not been cured of dropsy by bleeding. Again, I have seen abundance of albumen in the urine, where there was such debility of the frame, as to forbid bleeding altogether. I should therefore advise you, in every case of dropsy, to determine the question, whether it is to be treated by bleeding or not, simply by observing whether there are inflammatory symptoms or not;—not to consider the state of the urine in the least; but to consider whether the symptoms are those of inflammation or not. If you find in any case of dropsy a full, strong, and quick pulse, with strength of body, you are then to presume that the case is of an inflammatory nature. If you find there is local pain, and other symptoms of local inflammation anywhere,—whether in the head, chest, or abdomen,—that is quite sufficient to determine the inflammatory nature of the case. Again, if you cannot learn much from these particulars,—if the pulse do not shew any phlogistic diathesis; and if the head, chest, and abdomen, are particularly free from inflammation, yet still if the disease have come on suddenly,—as inflammation often does;—if it is not the work of slow disease, like visceral affection; but has come on suddenly, and come on from the common cause of inflammation, (such as the application of cold and wet, especially

when the body is over-heated);—then the presumption is that the case is inflammatory; and you will not do wrong if you bleed, so far as the pulse will justify you; for the pulse will often *justify* this treatment, though it will not *point it out.* You must frequently have recourse to the pulse;—not to learn what to do, but to learn whether it will sanction you in doing what other symptoms indicate to be a proper procedure. Whenever dropsy comes on suddenly, from the application of cold and wet, and the pulse will justfy me, I certainly treat it as an inflammatory complaint. When the pulse is full, accompanied by a phlogistic diathesis, and signs of local inflammation, there can be no doubt about the treament of the case.

With regard to the albuminous state of the urine, we are indebted to Dr. Bright for the fact, that in organic disease of the kidney, the urine is generally in this albuminous state;—that is to say, contains serum. Andral, in his "Clinical Reports," had previously mentioned a case where he found the urine albuminous, and the kidney in a granulated state. He simply mentioned the fact; he had no more facts, and he came to no general conclusion, nor would he have been justified in doing so. But Dr. Bright has collected a large number of cases; and he has found that when the kidney is in a disorganized state, the urine is generally albuminous. He does not say, (so far as I can understand his book), that when the urine is albuminous, the kidney *must* be in a state of organic disease; for he says that sometimes he has seen it only gorged with blood. But still, even here, the kidney was *affected.* Some have gone farther than this; and I think without any reason whatever. They would have us believe that nobody can have albuminous urine, without organic disease of the kidney. Now really I cannot subscribe to this assertion; and for this reason. I have seen patients who were perfectly well a day or two before, but who have got wet through; symptoms of inflammatory dropsy have come on; the urine has become albuminous; but on bleeding them, the dropsy has presently been got the better of, and the urine has recovered its healthy appearance. Why these poor people should be supposed to have had diseased kidneys, merely because they had albuminous urine for a week, I cannot imagine. It is a mere assumption, I think. I could not open them, to ascertain whether their kidneys were diseased; but as they are in perfect health now, and had been in perfect health just before, and the urine is no longer albuminous, I do not believe there is any more foundation for supposing the existence of organic disease, than there is for supposing that cancer of the stomach is present in every case of temporary dyspepsia, because, when people *die* of dyspepsia, we find more or less organic disease. It is the business of those who make these assertions, to prove their correctness;—to prove that these persons have organic disease of the kidney, and not our business to disprove it; we have nothing to do with it. Because, when a person *dies* making albuminous urine, you always find structural disease of the kidney, it does not follow that, when the urine *temporarily* presents the same phenomenon,

and the person recovers, he has had any thing more than a functional complaint. Because the affection of the kidneys may arrive at such a degree of intensity, as to destroy life, and you then always find organic disease, it does not follow that the *temporary* formation of albumen in the urine, should be any thing more than a functional disturbance of the kidneys. I should draw just the opposite conclusion; and should suppose that, if the symptoms were temporary, the disease must be functional. Dr. Mackintosh informed me that some medical students in Edinburgh, had lately ascertained that when they ate pie-crust, and it produced dyspepsia, their urine became albuminous. They made this experiment over and over again; and the circumstance is nothing more than I should expect.*

It frequently happens, however, that dropsy is not inflammatory. You have patients exceedingly pale, with a pulse exceedingly weak, together with extreme debility of the whole frame; and the more you weaken them, the worse it is;—the more does the dropsy increase. Dropsy is frequently an accompaniment of organic disease in various parts. In disease of the liver, for instance, it is very common for the peritoneum to become the subject of dropsy. In disease of the womb, too, it is very common for the lower extremities to become œdematous; and this œdema at last spreads through the whole body, so that you have what is called *anasarca*. Œdema is a *local* dropsy of the cellular membrane; anasarca is a *general* dropsy of it. When we see no signs of inflammation,—no fulness of pulse (for there may be quickness without fulness), but, on the other hand, debility; and when you find the powers of the patient becoming exceedingly reduced, the disease must be put upon a footing with passive inflammation, or passive hæmorrhage, or a passive discharge,—a gleet from a mucous membrane; and every thing which debilitates the body will make the matter worse. This must be the case if there be any visceral disease; such as disease of the liver,—a liver full of tubercles, or indurated; or scirrhus, or carcinoma of the womb; or ulceration of the lungs. Dropsy, too, will sometimes be like hæmorrhage,—an entirely *mechanical* business;—not dependent on inflammation on the one hand, or debility on the other; but upon mere mechanical obstruction. Whatever compresses the large veins, will produce dropsy. The vessels become so turgid that, in order to relieve themselves, they let forth the serous portion of the blood; and if that be not sufficient, then the blood itself escapes.

In the treatment of *inflammatory* dropsy, we have above all to bleed, to purge freely, and to adopt low diet; and sometimes to give mercury. In this form of the complaint, we need not trouble ourselves about diuretics; any more than about astringents, in active hæmorrhage from a mucous membrane. If you treat the inflammation, you will generally find the collection of water gradually cease.

* Dr. Graves, the eminent Professor of the Institutes of Medicine, in the School of Physic in Ireland, has done much to dissolve the supposed invariable connexion between albuminous urine and disease of the kidney. He shows that it often depends on disease of the *liver*. See his valuable papers in the "Dublin Journal of Medical and Chemical Science."

However, sometimes it does not; and then it is well, when you give purgatives, to exhibit those which are called *hydragogue;* which cause very watery stools. That, in general, will answer every purpose. Purgatives are exceedingly beneficial, in cases of inflammatory dropsy; for they not only act as anti-inflammatory remedies (exactly as bleeding does, in diminishing the bulk of the fluids) by causing a rapid secretion of fluid with the intestines, and thus acting upon the cause of the disease, by tending to subdue the inflammation; but they act as palliatives, by causing the absorption of the effused dropsical fluid. It would be in vain to give diuretics in inflammatory dropsy; for they would not act during the inflammatory state of the system. Diuretics will not then act upon the kidneys; and the more you stimulate the kidneys, the less urine is secreted. But when you are giving hydragogue purgatives, you are doing the same as bleeding does; and, at the same time, you hasten the absorption of what has been collected; and in proportion as the inflammation is lessened, so do the hydragogue purgatives exercise more and more power over the kidneys. Among the best are elaterium and a mixture of jalap and cream of tartar.

If the dropsy be of *another* description, (such as I mentioned as being *without* any marks of inflammation), starving and bleeding will increase the collection ten-fold. Here you have to give wine, and perhaps good nourishment; together with steel, sulphate of quinine, and various diuretics. In this case the disease hangs on the patient so long, and such great inconvenience is felt from the collection of fluid, that, although diuretics will not *cure* the complaint, yet they are necessary for the purpose of lessening the quantity of fluid, which is collected in the body. Diuretics cannot go to the *cause* of the dropsy; they only tend to lessen the *effect* of the dropsy. Among the best are digitalis, calomel, squills, and acetate of potassa; and you will find it very useful to give these together. When you cannot increase the dose of digitalis, or squills, you may of the potassa; and so, by giving a great number of remedies, you do better than by trusting to one. We may give them to a full amount, by combining several together. The hydriodate of potassa, and all the other salts of this alkali, are strongly diuretic.

The effect of diuretics is very much increased by the exhibition of mercury. In inflammatory dropsy, mercury is highly useful as a remedy against inflammation; but, in the opposite kind, it frequently would do harm by increasing the debility, especially if there were much organic disease; but given in great moderation, so as to produce a slight affection of the mouth, it will enable the other diuretics to act much more powerfully on the kidneys. Though we sometimes succeed in curing dropsy, by putting a patient under a profuse ptyalism, when all other things have failed; yet generally that is not the case, unless the dropsy is in some degree inflammatory, or unless there is inflammation of some organ; but, in all cases, the moderate administration of mercury certainly makes all other diuretics answer ten times better.

When the chest is oppressed, and we find the patient in danger of being suffocated; or when the abdomen is distended, and the patient suffers great pain; or when the cellular membrane is distended, so that a patient cannot move about; and we cannot wait for the cure of the dropsy itself, or of its cause,—be it debility or obstruction, or any thing else,—it would be right to have recourse to means calculated to get rid of the fluid as soon as possible. In these circumstances, violent purgatives (such as elaterium) in full doses, answer better than diuretics; and for this reason;—they cause a greater discharge; and they frequently go to the *cause* of the dropsy; and remove some obstruction, some congestion, or some inflammation. But, of course, diuretics may be given with the purgatives, to increase the effect. It is found useful to give diluents at the same time; for diuretics are frequently so very acrid, that they irritate the kidneys, much more than is necessary for secretion; and their operation is much facilitated by the patient's drinking largely of diluents. The same is observed with respect to purgatives. They seem to operate a great deal better, if plenty of diluents be taken at the same time.

We sometimes find that patients are so oppressed with the fluid, that they cannot wait any longer. We find that our remedies do not remove it; and then we are obliged to have recourse to certain mechanical means for accomplishing this object. These are paracentesis of the chest, or of the abdomen, and (in cases of anasarca) the making of minute punctures in the skin, with a needle. Some persons scarify; but I am quite sure that every purpose may be answered with a fine needle. By making minute punctures in the skin, an immense quantity of water may be drawn away. There is no occasion to introduce the needle deeply; you have simply to put it through the skin, by rotating it between the finger and thumb; and when you withdraw it, you will see a bead of clear serum appear, which for a time will become larger and larger. It then trickles down; and the oozing will perhaps continue for some time. I have known it continue for days even after death. Twenty or thirty punctures may be made; and I never saw harm arise from the practice, when it was put in force above the knee. But although these punctures made with a needle are very minute, and the aperture is merely through the skin, I know that patients have lost their lives through them. I know that gangrene has taken place even through this slight operation; but in every case of this description that has come to my knowledge, the apertures had been made *below* the knee. It is an established rule in scarifying, to make the scarifications as high as possible towards the trunk of the body,—near to the most powerful parts of the body; and the same rule should be observed with respect to acupunctures. I have used them with great success all over the trunk, and upon the thighs, as low as the knees; and I have used them with equal success in all parts of the upper extremities; and I never met with any inconvenience. Be-

fore I was aware of the danger, I frequently used them below the knee; and never once did any accident at all dangerous occur to me. Gentlemen, however, have related to me cases which came to their own knowledge, where the operation below the knee was dangerous; where it was followed by sloughing of the skin; and, indeed, by sloughing of many muscles. One patient lost the gastrocnemii; and, at the end of two or three weeks, he lost his life. That is what no one would have supposed; but it certainly is the case.

These mechanical means are now and then necessary; but not so often as might be imagined, provided we treat the disease accordingly as it is inflammatory or not. If we carefully distinguish whether there is inflammation or not, we shall cure the complaint in a large number of cases. At St. Thomas's Hospital, when I have admitted a patient with the word "*dropsy*" on his letter, I have frequently been asked—"how I could admit such a case as that; since it was well known that dropsy could not be cured; and that Doctor Fordyce never admitted such cases." One of the greatest improvements in medicine, is that of distinguishing inflammatory diseases from those which are not so; and the establishment of the fact, that a great number of diseases are nothing more than so many inflammations. One half of the cases of dropsy which I see, are of an inflammatory nature; and yield to bleeding, and the other common remedies of inflammation.

It frequently happens, that inflammatory anasarca is united with inflammation of certain internal organs. Perhaps it is combined with an inflammatory state of the head;—not with decided phrenitis; but with heaviness, giddiness, and pain. Sometimes it is united with an inflammatory state of the abdomen; but, as far as I have observed, it is much more frequently combined with an inflammatory state of the lungs; either in the form of bronchitis (which is by far the most common), or of peripneumonia. The other kind of dropsy (which appears independent of inflammation), is sometimes united with, and is one of the last symptoms of, structural disease of an internal organ. It is very common, in disease of the heart, for example, for a person to become dropsical. In a large number of instances of phthisis, there is œdema of the legs, towards the conclusion of the affection; and when the liver, the uterus, or the spleen is diseased, dropsy is exceedingly common.

All these particular dropsies, closely resemble hæmorrhage and fluxes. You will recollect that hæmorrhage and fluxes, are frequently of an active inflammatory kind; and are to be treated, not by remedies calculated to arrest the flow of fluid, but by the remedies of inflammation;—not by astringents, but by antiphlogistic measures. On the same principle inflammatory dropsy is to be treated, not by remedies calculated to carry off the fluid, or stop up the mouths of the vessels which pour forth the secretion, but by remedies calculated to remove inflammation. You will find in hæmorrhage, that frequently there is no inflammation at all; but merely such a debilitated state of the vessels as allows the blood to escape from their ex-

tremities; and dropsy and fluxes frequently appear in that form. You will recollect, too, that hæmorrhage frequently arises under visceral disease. It is very common for persons with diseased liver, to have hæmorrhage from the nose; and in organic disease of the liver and spleen, persons will vomit blood, and discharge a great quantity from the intestinal canal. I need not say that, when various organic diseases produce ulceration, you may have the most frightful hæmorrhage. This is seen, every day, in the case of the intestines and of the uterus. So it is with respect to dropsy. You will recollect that, when organic disease takes place in various organs, the body at large, or one part in particular, may become dropsical; and the more you debilitate the patient in this case, (as in the case of passive hæmorrhage), the greater will be the increase of the dropsy; just as would be the increase of the hæmorrhage. In many cases of hæmorrhage, the flow of blood proceeds from mechanical obstruction; and the same occurrence takes place in dropsy. If great obstruction take place in any of the veins, dropsy must be the consequence. Local, and more or less extensive plethora takes place, in all the vessels on the other side of the obstruction; and, as a mere physical effect, the watery parts of the blood ooze forth from their extremities; and the part becomes more or less turgid, from the great congestion. You know there is every reason to believe, that the swelling of the leg after parturition, called *phlegmasia dolens*, depends upon mere mechanical obstruction. There is more or less dropsy of the leg; and it usually arises (as is proved by Dr. D. D. Davis and others) from obstruction. There is an obstruction of the veins at the upper part of the extremity; and perhaps also in the veins still higher up. The pressure of a very enlarged womb will often, in this way, induce dropsy of the lower extremities. In cancer affecting the axillary glands, or when the breast is attacked by cancer or scirrhus, you see an upper extremity become œdematous;—simply from mechanical obstruction. It is not necessary that the absorbents should be affected; for if the veins be obstructed, the same effect is produced. A local plethora takes place;—both of veins and capillary vessels. These pour forth a watery secretion; and you are sure to see dropsy at last;—simply as a mechanical effect.

In those cases of dropsy which are independent of inflammation, there may be organic disease, or there may not. Very frequently you have evidence of organic disease in the system, affecting particular parts. If it be phthisis, it is sufficiently clear; if it be disease of the heart, it is sufficiently clear; if it be disease of the liver, you may generally ascertain the state of the parts;—you find the liver enlarged or indurated, or both;—and the same with regard to the spleen. If, however, you can find no organic disease whatever, and yet there are no signs of inflammation; if the patient be evidently sinking under his dropsy, and the urine is albuminous;—I believe, in the greater number of cases (provided the urine is *constantly* albuminous), the kidney is diseased. It is generally found granulated, mottled, or labouring under great congestion of blood. You will

recollect that I mentioned, as my own opinion, that an albuminous state of the urine does not *necessarily* indicate organic disease of the kidney. I am satisfied that the patient may be labouring under mere functional derangement of that organ, of a temporary nature. But when you see a person sinking under dropsy, and the urine is albuminous, you may, in almost every case, expect to find more or less organic disease of the kidney. This is a curious circumstance, for the knowledge of which we are indebted to Dr. Bright.

With respect to the symptoms of these various dropsies, I shall mention them when speaking of diseases of different organs of the body; but with respect to anasarca, as that is a general affection, and therefore will not come under the head of diseases of particular organs, I mention the symptoms of it, and likewise the treatment, as well as of dropsy in general, in this place.

Anasarca will often exist alone. It frequently is an inflammatory dropsy; and when not, it will often exist without any evidence of organic disease; though after death we perhaps find the kidney diseased. But anasarca, as only one form of dropsy, often follows others. When a person has water in the chest, it is usual for the legs, and perhaps the whole body, to become œdematous. When there is effusion into the abdomen, it is very common for this *ascites* (as it is called) to be sooner or later followed by swollen legs; and at last the œdema may pervade the whole body, and become anasarca. The latter may exist alone, or it may follow others. Sometimes it is the first that begins; and then the other dropsies follow.

I did not mention any particulars for forming a prognosis, in cases of hæmorrhage, or in the case of the various fluxes; because the prognosis is only to be made by observing the degree of disturbance on the one hand, and the strength of the patient on the other. In dropsy, we must of course follow the same rule; but as dropsy, when it is not inflammatory, so frequently depends upon organic disease, our prognosis will depend, in a great number of cases of a chronic character, upon the evidence which there is of organic affection. We have also carefully to note, in giving a prognosis with regard to dropsy, whether, although the dropsy improves, some other symptom does not continue or get worse. Dropsy will sometimes diminish rather suddenly; and the patient, so far from being better, (although that is apparently the case), will die within a very short time. Sometimes, a short period before death, all the external symptoms of dropsy have diminished. Sometimes ascites will nearly disappear, or greatly improve at last; and œdema of the legs and the whole body diminish very considerably; and yet the patient will speedily die;—perhaps of apoplexy, perhaps of effusion into the chest. You must not be satisfied with the disappearance of any of the symptoms of dropsy. You must also carefully observe whether there are not still sufficient symptoms of mischief within, to make you fear the result of the case. Very frequently the severest symptoms may still exist; and may soon exhibit the most dangerous character, after a dropsy has spontaneously diminished.

With regard to the fluid of these various dropsies in the chest (the pleuræ and the pericardium), in the peritoneum, and in the head, it is sometimes perfectly clear; but more frequently it is at least turbid;—not transparent, though translucent. Sometimes it is very turbid indeed; and sometimes bloody. The fluid which forms the swelling, in anasarca, is perfectly clear; as is proved by the operation of acupuncture. If you make a minute puncture of the skin, with the point of a needle, (which is acupuncture), a bead of fluid follows, which is beautifully transparent. In the case of chronic dropsy within the head,—chronic hydrocephalus,—the collection of fluid is almost like rock-water. In chronic hydrocephalus, more frequently than otherwise, you find the fluid collected within the ventricles of the brain; and this fluid is very little different from pure water. It contains the least possible quantity of animal matter and salts. I believe the fluid of chronic hydrocephalus comes nearest to pure water, of any fluid that is morbidly collected in the body.

DEFICIENT SECRETIONS.

Some diseases are exactly the reverse of hæmorrhage, the profluvia, and dropsy;—being distinguished by a *deficiency* of secretion. In the height of inflammation, the secretion from the part may become scanty. Although it is increased at first, it will decrease afterwards; but still usually remains beyond the natural quantity. Sometimes, however, in inflammation, the secretion is at a stand. The secretions of the part itself, as well as the rest of the body, are diminished; and sometimes the part affected secretes hardly at all. This circumstance may occur, however, independently of inflammation. As with respect to violent discharges, so we sometimes have, independently of inflammation, a perfect deficiency of secretion. This happens, in a most remarkable way, in the case of the kidney. Old men will sometimes cease to make water, not from any *retention* of urine, but from a *suppression* of it;—the kidney ceasing, or nearly ceasing, to secrete. In *ischuria renalis*, as it is called, we have an instance of a case exactly opposite to that which occurs in profluvia. The treatment of this particular disease I shall, of course, speak of hereafter; I am now only speaking of these affections in general. We sometimes observe, on opening bodies, a similar state of the serous membranes. Sometimes the pericardium, and sometimes the pleura, is perfectly dry;—almost as dry as a piece of dried bladder. You will find this mentioned in many works on Morbid Anatomy. I do not know that this state induces any symptoms during life; but the state which is found after death, is precisely opposite to that which occurs in the affections of which I have just been speaking.

CHANGES OF STRUCTURE.

Inflammation sometimes produces changes of structure; and as I have spoken of those circumstances which merely affect secretion, or the escape of different fluids, I now proceed to those which affect the substance of the body itself. Changes of structure, though

frequently produced by inflammation, and frequently connected with inflammation, are sometimes (like hæmorrhages, dropsies, and the profluvia) *not* connected with it. They are, in the first place, changes of *consistence*, and changes of *size;* in the next place, transformations, in which the substance is changed in its *nature;* and thirdly, new formations, in which something new appears, totally different from what we see in the body naturally. Two, or even all three of these changes, may occur together. The first of which I shall speak, and which are more frequently the effect of inflammation than not, are changes of consistence, and changes of size. With respect to changes of *consistence*, I need not say that they can only be two; hardening on the one hand, and softening on the other. I shall first speak of induration.

INDURATION.

It is to be remembered, however, in the first place, that induration may be only apparent. An organ may feel much harder than natural,—may be really harder; and yet we are justified in saying that the hardness is only apparent. I will explain this. If there be extreme congestion in a part that can expand, it will become larger, and feel much harder than natural. If there be an obstruction to the flow of blood from the liver, though the liver itself will only be of its natural hardness, yet, in consequence of the obstruction, it will feel exceedingly hard; but, on liberating the blood, or making an incision, and letting the blood escape, it will come down to its natural consistence. This affection may be induced by an obstruction during life; and I believe that, the same thing may be induced after death, by a violent injection of fluid. We must therefore consider, when we see a part indurated, whether it is organic induration, or merely a state of great turgescence, or repletion, in consequence of an excess of fluid. When a part is really hardened, it is generally pale. Of course, if the hardness be merely dependent upon the collection of blood in the part, it will be of a deeper colour than usual; but if the part be organically hardened,—if it have undergone a hardening process, it is generally paler. Being more compact, you must suppose that, in general, the diameter of the blood-vessels will be less; and therefore there will not be such a proportion of blood as there was before. Sometimes the hardened part acquires a new colour. It may be grey, yellow, brown, or even black; but, for the most part, a portion of the body which has become indurated, is paler than usual. It does not follow, because a part has become indurated, that the size should be altered. You may have a part hardened; and it may be larger or smaller than before; or it may retain its natural size. We have every day instances of induration, in the case of a fistula along the side of the rectum, and in fistula in perineo. You may find here that the parts are all exceedingly hard. The heart is not unfrequently in this condition; for though this organ is more frequently affected in *size*, we not unfrequently find the heart hard. Even the general cellular

membrane is frequently seen hardened; and especially in young children.

This process of hardening is, for the most part, slow; and is generally the effect of chronic inflammation. Sometimes it does not occur till the inflammation is entirely over;—till the part has become pale, and there is no reason to suppose that inflammation exists; and then that process will take place, by which the part becomes hardened.

In the latter case, the affection is best removed by irritating the part. If the hardening be evidently attended by inflammation, antiphlogistic remedies are the best that can be adopted. Bleeding, both local and general, together with mercury, iodine, fomentations, poultices, friction, and pressure, are particularly proper. But sometimes there is no inflammation to be discovered; and then stimulation of the part answers much better than any thing else. It is also of great use to excite a discharge from the part itself, or close to it. It will frequently cause an absorption of the excessive matter which has been deposited. Occasionally, when there is no inflammation to be discovered, the treatment of induration becomes so irritating, that inflammation is set up; so that inflammation, although it may at first have laid the foundation of the disease, and produced it, yet afterwards has ceased; and then comes on again, as a third stage.

SOFTENING.

The opposite to this change of parts is softening; called by the French *ramollissement*. Indeed, many persons would not, for the world, use the word "*softening;*" but must ever employ the term "*ramolissement.*" However, it can mean nothing more in plain English than *softening*. Formerly this change was very vaguely described. Even induration was commonly described as a termination of inflammation, by the name of "*scirrhus;*"—scirrhus being confounded with simple induration; and as to softening, the subject has not been understood till of late years. It is to the French that we are particularly indebted, for our knowledge of that change of parts which consists in softening. This process is remarkably seen in the nervous system; and also in the alimentary canal. The mucous membrane of the stomach and intestines, is frequently reduced to a mere pulp, which you may brush off with a slight touch of the finger; and sometimes it appears to be brushed off even before death. In the case of the brain, we every day see that organ reduced, in certain portions, to a mere soft paste. It occurs, also, in the skin;—sometimes in the epidermis, sometimes in the cutis itself, and sometimes in the nails. We must all have seen the nails so softened, as to appear more like wet card than any thing else. This softening will affect the cellular membrane; and then it will allow the serous membrane without the intestines, for example, or the mucous membrane within, to be peeled off. If you can peel off the peritoneum from a portion of the stomach and intestines, it must be from the subjacent cellular membrane having become so softened,

that the serous membrane is no longer attached. So, if you can peel off portions of the mucous membrane, it must be from the submucous cellular membrane having become so softened, that it is no longer properly attached. The cellular membrane will sometimes remain solid, while all the other parts are excessively softened. This is seen in the case of the brain, for example, and of the spinal marrow. They shall become soft; while the pia mater (which corresponds with cellular membrane) immediately upon the brain, and immediately upon the spinal marrow, will be perfectly firm. A serous membrane, such as the peritoneum, will sometimes soften; as will also arteries, and even cartilage and bone itself. Bones may shew such a disposition to become softened, that one species of disease has acquired the particular name of *mollities ossium;* and in rickets,—another disease of the bones,—they are much below their natural consistence. The muscles, too, will sometimes become soft. After a person has been long exposed to the operation of lead in painting, I have seen the muscles become much softer than they should be; and so pale as to look like any thing but muscles. The heart itself, like other muscles, will frequently become soft. Sometimes you may push your finger through it parieties;—so excessively softened do they become. But every structure of every portion of the body may become softened. When parts are softened, they frequently retain their natural colour; but sometimes they are paler than they should be; sometimes they are redder; and sometimes they become brown and dark. You see there are great varieties with regard to colour; both when a part is indurated, and when it is softened. The colour may be unaltered; or it may be paler than natural (which I mentioned is generally the case); or it may be deeper than usual.

As with regard to induration, so with respect to softening, a part may sometimes be larger than it should be; or it may be smaller; and sometimes its bulk remains the same. You would not suppose that a part could be very rapidly softened; and yet it is certain that a part may be softened in a very short time;—at least, for myself, together with many French writers, and perhaps others, I feel satisfied that that is the case. It is mentioned by the French that a few days, if not a shorter time, are sufficient to produce a pulpiness of an organ, which before was apparently in a state of health. I think I have seen sufficient to make me believe that, in an acute disease, an organ (apparently sound before) may lose its natural firmness, and become a mere pulp, in a very short space of time.

Induration is generally the effect of chronic inflammation; and softening frequently arises from the same source. But I have seen a person in tolerable health suddenly, without any evident reason, fall into a state of the greatest debility;—with most complete prostration of strength; with no pulse; and in two or three days, some organ or other has been found reduced to a pulp. I had great doubts when I first noticed this, of the accuracy of my observation; but on reading the French writers, I found that they detailed cases

exactly similar; and that they came to the conclusion which I felt inclined to, though I was really almost afraid to make up my mind. When very rapid, I do not believe it is always the result of inflammation, or is even inflammatory; and when a slow process, I am sure it is not always inflammatory; for the parts are often exceedingly pale. In rickets, or in *mollities ossium*, what inflammation is there of the bones?

Induration, I have stated, may in certain cases be recovered from, by the remedies of inflammation; while in others stimulants will frequently remove it; especially if aided by mercury and iodine. But it is not known whether a softened state of a part can be recovered from. It is very doubtful whether this is the case. One would not think it possible if the portions be reduced to pulp. I also mentioned, that you are not to consider every case of *apparent* induration as *real;* for it may depend upon great congestion. From the presence of fluid, a part may acquire increased bulk and firmness. But softening cannot be merely apparent. If a part be soft, there can be no deception in it. You have, however, to guard against an error on this point. Softening may occur after death; and merely because, on a *post-mortem* examination, you find a part excessively softened, you are not to conclude that it was in that state during life. Parts will become softened from decomposition;—they will melt down to a reddish pulp. I mentioned, when speaking of redness, that a red appearance is sometimes mistaken for inflammation; whereas it may be only the effect of a red fluid which transudes, and encircles and dyes the part. Parts will become softened from decomposition. The brain, without any morbid state, very speedily becomes soft. Every body knows that if he wishes to dissect a brain well, he must have it fresh; that if the person have been dead any time, or the brain has been exposed to the air, it becomes too soft for accurate dissection. But the fluids within the body will themselves sometimes dissolve parts. There can be no doubt that the gastric juice will produce a softening of the interior of the stomach; and even do more than that. It will soften the whole coats of the organ; escape into the cavity of the peritoneum; and soften whatever it comes near. This was discovered by John Hunter; and I think we have sufficient proof of the accuracy of his observation. The appearances thus arising from the gastric juice, have sometimes led persons, who were ignorant of the fact, to imagine that a patient had been poisoned.

I need not say that, when softening occurs during life, it must produce some effect. A large number of cases of paralysis, depend upon a softening of the brain, or of the spinal marrow. Some cases of fatuity, likewise, depend upon a softened state of the anterior portion of the brain. Sometimes you have extreme debility, when any essential organ (such as the liver, the lungs, or the heart) becomes softened. Except in bones, and parts at or near the surface, the existence of this softened state cannot, of course, be well known during life. We only infer it as probable. If the part shew

signs of inflammation, the only treatment you can adopt is that for inflammation. You do not know that the part is softened; you only see that it is inflamed. In cases of paralysis, you cannot tell that the part is softened; but when you have symptoms of violent pain at one part of the head, and great heat, and the patient gradually becomes paralytic, there is a probability that the part is softened; but still you have no proof of it. If you see signs of inflammation, you must treat them;—without regard to softening or induration. If you see prostration of strength, you must endeavour to remove it;—not knowing whether the parts are softened or not. In the case of the heart, you may expect extreme feebleness of its stroke, when examined at the chest.

HYPERTROPHY.

The foregoing are changes with respect to *consistence;* we have others with respect to *size.* If a part really obtain an addition of substance, not dependent on transformation, or a new formation, it is said to be *hypertrophied.* This is a new word; but it is a very convenient one. The part suffers an excess of nourishment; it is therefore hypertrophied,—over-nourished. Hypertrophy may affect one elementary tissue of an organ only; or it may affect the whole of an organ together;—every tissue of which it is composed. It will sometimes affect the cellular membrane; and then this becomes thicker and perhaps denser than it should be. You may have a part over-nourished, without increasing in size. The excess may be such as merely to harden it; so that, in one sense, induration may be an hypertrophy. But, very generally, when a part is over-nourished, it acquires a considerable excess of bulk. If the cellular membrane be over-nourished, and at the same time indurated, you will see dead-white, or semi-translucent streaks along it;—white lines. Frequently portions of it, only, fall into this state of excessive nourishment. Tumors may be produced, which will cut like a turnip, and in which white and greyish fibres are seen. This is the character of scirrhus; and there is a doubt among those who cultivate morbid anatomy, as to whether this ought to be called a new formation; or is merely an excessive nourishment,—hypertrophy and induration,—of the cellular membrane. But however this may be, when the cellular membrane is thus affected, you see dead white, or semi-translucent lines;—white streaks, or white layers; and it may form a tumor in one particular spot. Sometimes the cellular membrane, in this state, will cut like lard; or like imperfect cartilage.

Mucous membranes are frequently hypertrophied. You will see the villi of the intestines very much enlarged; you will see the mucous follicles enlarged; and you will see the whole together much increased. The skin frequently suffers this change;—becomes excessively indurated and thickened. The brain will sometimes be hypertrophied, though I never saw but one instance of this affection. I have seen many instances of partial induration; and cases where all the brain was very firm; but there was nothing except a harden-

ing of the organ. In this instance, however, the brain had become larger than it should be. It caused the skull to be very much beyond the usual dimensions; and looked, on opening the skull, as if it had been ready to burst it asunder. The convolutions were all very large. This is a state described by many authors; and, for the most part, fatal disease of the brain is at length produced. This patient,—a lad, who was exceedingly precocious,—had a head larger than a man's. His character corresponded with that of an adult; and he suddenly became apoplectic, hemiplegic, and died. Nothing was to be found but an excessive size of the organ;—the brain, in other respects, being healthy.

The spinal marrow has been seen hypertrophied. Nerves will fall into this state after amputation. The nervous ends will become very large; and frequently there is a morbid sensibility. Muscles are sometimes seen hypertrophied; but the organ most frequently thus affected is the heart. The most common disease of the heart, is excessive nourishment of some portion; and that portion is, by far most frequently, the left ventricle. Blood-vessels, as well as the heart, will become hypertrophied; so that you have vascular tumors, filled with blood of course. On examining these tumors, you find nothing but a congeries of blood-vessels. Some tumors of this description, have been called *fungus hæmatodes;* but such an appellation leads to a confusion of terms. By *fungus hæmatodes* we more particularly understand a combination of this state, with a deposition of encephaloid (brain-like) substance. Blood-vessels are often hypertrophied accessorily.

When a part is over-nourished, there is usually, I said, an increase of bulk; but an excess of nourishment may go only to condensation; and then you may not have a change of size, but only of consistence; and sometimes an organ which is partially over-nourished, may be smaller than usual. It will sometimes happen, when an organ is compósed of more tissues than one, that one tissue will entirely waste; and the wasting of the one, may more than counterbalance the over-nourishment of another. With respect to the cavity of an organ so hypertrophied, you may sometimes see it diminished, sometimes increased, and sometimes unaltered. That occurs in the case of the heart. Sometimes, if the heart be hypertrophied, the cavities enlarge; but sometimes the deposition of matter takes place outwards, and the heart really is enlarged, but the cavity remains much the same. Occasionally, however, the deposition takes place inwards; and the cavity becomes greatly reduced. When a part is thus hypertrophied, the consistence sometimes remains the same; sometimes it is increased; and sometimes it is diminished. There is just the same variation in colour. Sometimes the colour remains natural; sometimes it is paler; and sometimes it is heightened.

I believe that hypertrophy of a part is generally, more or less, of an inflammatory nature. Certainly, that is the case with the heart. Hypertrophy of the heart is, in most instances, entirely of an inflam-

matory nature; and indeed you must suppose that an excess of nourishment, must be the result of an excessive action in the part itself;—you must suppose that all the natural processes of the heart, are going on with tenfold vigour. If a certain operation be necessary to the continuance of nourishment, and it is much increased, you will have an excess of nourishment. It is impossible, in a great number of cases, to consider hypertrophy as any thing more, than a sort of inflammatory state. Excessive exercise of a part, however, will sometimes cause it to be over-nourished. We know that muscles will increase by exercise. A great excess of action in a part, will sometimes cause it to acquire a bulk, much beyond its natural dimensions. Still this is excessive excitement. It is *chronic* inflammation which causes hypertrophy; *acute* inflammation rarely does;—except so far as it lays the foundation for hypertrophy. Andral mentions that hypertrophy may sometimes arise from a defect of absorption; that the absorbents do not carry away the materials that they ought. An accumulation of nourishment takes place, without undue nourishment being deposited. This, however, is but a mere hypothesis. He calls it a want of de-assimilation;—the want of removal of those particles which are already deposited, and have served their purpose. When a part falls into this condition of hypertrophy, it is necessarily in a state of excessive activity; though perhaps without strength; and indeed no mark of inflammation may be discernible. Persons of the most sickly character, are frequently subject to this affection; as in those unhealthy parts of the world where bronchocele exists;—where the thyroid gland falls into a state of hypertrophy. Individuals in those situations are, for the most part, in a state of delicate health;—sallow,—shrivelled. So in rickets the ends of the bones enlarge very much;—they are hypertrophied; but the case is one of debility. In scrofula, we frequently see parts become enlarged. You see the ends of the fingers, in a case of decided scrofula, much enlarged; the mesenteric glands, and also the upper lip, are much larger than they should be; and yet such persons are not instances of strength, and of increased vigour. Indeed, in the most unhealthy districts, (the valleys of the Alps, for example), you have hypertrophy, not only of the thyroid gland, but also of the liver, the tongue, the bones, and the hand; and yet the persons are pale and emaciated, and no sign of inflammation appears. Hypertrophy may induce very serious effects in the case of the brain. I believe that sooner or later apoplexy, paralysis, or epilepsy, will ensue. In the case of the heart very great suffering is induced. You have palpitation from the slightest causes; you have generally a strong violent pulse; and at last you have dropsy.

The usual remedies for hypertrophy, are the general remedies for inflammation;—rest and low diet, with moderate and repeated bleeding. But occasionally you are not justified in these measures; and you must then support the strength. Of course, when this affection occurs in a cachectic habit of body, (as rickets, or scrofula, or the state of cretinism in the Alps), any thing that depresses the powers

of the body may do harm; and good air and good food are the best remedies

ATROPHY.

The opposite of hypertrophy is atrophy,—wasting. Sometimes the part which wastes, does not become smaller, but becomes thinner than usual. Its bulk may be the same; but its texture may become lighter,—more spongy than usual. Atrophy sometimes affects the whole of an organ; sometimes only a portion, or a tissue; and sometimes the part will become thinner and thinner, till at last it is perforated. Parts that waste away are generally softer, and frequently paler than natural. Atrophy of parts is commonly induced by inflammation, or by violent irritation. The excessive nutrition of neigbouring organs, will frequently cause one to waste;—the excessive action going on in one, causing the actions of the other to decline. A wasting away of the testicles, frequently supervenes on inflammation which has followed the mumps. Andral mentions that, after suppuration near the liver, he saw the gall-bladder waste away entirely.

Atrophy is frequently an effect of bad air; of bad food; of depression of mind; of deficient exercise. As we must consider hypertropy in general to be *excessive* function, so in atrophy there is diminished action,—a *deficiency* of function. As it is usually the very opposite state of things from hypertrophy, very opposite remedies are usually required. So far from the part being allowed to be at rest, it must be well used if possible; and must also be stimulated as far as may be.

TRANSFORMATIONS.

I now proceed to consider those changes, in which one structure is converted into another structure, natural to the body. These are called *transformations.* Though of a diseased character, they are like those which naturally occur, during the growth and decline of an individual in health; or else they are such structures, as the particular part is actually found to be naturally of, in some of the series of animals. For example,—cellular membrane is the frame-work (if I may so speak) of the other structures of the body; and in the natural condition of the body,—in its natural progress, we observe that when a part is no longer wanted, it degenerates into cellular membrane. An instance of this is presented to us, in the thyroid gland of the fœtus. Now such a change will occur merely as a diseased process. A part may be resolved nearly into cellular membrane; and that is an instance of transformation. Cartilage will sometimes, by disease, become bone; but it is perfectly natural to the progress of the body, that cartilage should become bone in the fœtus; for before bone we have cartilage. Thus the morbid changes which are transformations, are nothing more than alterations, precisely the same as those which happen naturally in the progress of the human body; or they are alterations of a part to a structure, which it is seen to be of naturally, in some other animals. Although

they are morbid processes, they observe exactly the same law as those which are natural. One structure is not changed into another, unless that same structure is observed to be naturally changed into that other, at some period of the progress of the body; or unless that other is the natural structure of the part, in some of the series of animals. Cartilage, I have said, will become bone through disease; and the same is observed as a natural process at certain ages; whereas it is never known that, by any disease, a mucous will become a serous membrane. As such a change is unknown in physiology, so it is unknown in pathology.

Mucous membranes may be converted into skin; and skin may be converted into mucous membranes; muscles will also degenerate into fibrous membranes. Now the very same part which is mucous membrane in one animal, is skin in another; and what are muscles in some animals, are merely fibro-ligamentous substances in another. These same changes, however, will occasionally take place out of their natural course, through disease; and they are then called transformations. Cartilage, on the other hand, is never known, in physiology, to become mucous membrane. What is cartilage in one animal, is never mucous membrane in another; and in the transformations which take place in the progress of the human body naturally, cartilage never becomes mucous membrane. So in disease, cartilage is never known to be converted into a mucous membrane.

Now as to these transformations, almost all the structures of the body will waste into *cellular membrane*. It is, perhaps, hardly right to say they are *transformations* into it; because cellular tissue of the body, is the frame-work of all the other structures. Indeed, it has been said that, if all the various other substances were absorbed, and nothing but the cellular substance remained, (provided it could be kept firm), it would maintain the entire form of the body. Parts often appear to be transformed into *fat*. But Andral considers that this is merely an instance of inordinate secretion of fat, with or without atrophy of the tissues.

We have frequently a transformation to *serous* membrane. When the extremity of a bone has been dislocated, you will find, after a considerable lapse of time, that a serous membrane is formed round it. If a coagulum of blood be effused into the brain, or any other firm substance deposited there, (even if it is a bullet), it will become surrounded by a serous membrane,—a *capsule*, as it is called; which secretes serous fluid. Occasionally, when there is a loss of substance, which nature cannot entirely repair, the space is enveloped by a serous membrane. Even when a portion of substance is deficient,—not by external violence, but by a natural defect,—its place is frequently supplied by a serous membrane. In a defect of portions of brain, you will find in their room a bag, containing liquid; which bag is, to all intents and purposes, a serous membrane. What are called *apoplectic cells* in the brain, are nothing more than cavities formed by a coagulum of blood which has been effused; and which

coagulum has had a serous membrane formed around it. The coagulum will be absorbed, while the serous membrane may remain, and continue to secrete fluid.

Such serous cysts may be formed in almost any part of the body. You know that a serous membrane is a closed sac, with a smooth internal secreting surface; and that it is found in the body naturally. Precisely such serous sacs are formed by disease; and are of all sizes, from that of a pin's head, and even (more minute still) from that of a millet-seed, to a very considerable bulk. We find these cysts sometimes placed in juxta-position, either attached or unattached to each other; and sometimes they are closely united to the surrounding parts. They may be single or they may be numerous,—solitary or crowded. Generally there is no red vessel to be traced beneath the external surface; and the utmost vascularity is an arborisation upon this. The part which surrounds these cysts, may be in all sorts of states. Usually it is perfectly healthy; sometimes it is wasted; and sometimes it is in other states of disease; as, for example, indurated. Occasionally we find these serous cysts surrounded by pus, or some other secretion. They are frequently surrounded by cellular substance, which gives them an additional coat; sometimes they become indurated,—even to cartilage or bone; and sometimes they become more or less fibrous. You will recollect that the cellular membrane becomes very firm, round the fibrinous cup of an abscess, and gives it an additional support; and so it is with respect to these serous cysts. The cellular membrane around them, is frequently condensed.

The internal part of these serous cysts, presents very various appearances. Occasionally, and, indeed, for the most part, it is smooth,—exactly as in a natural serous membrane; but it varies just as natural serous membranes do when diseased. When natural serous membranes are diseased, they are frequently rough, granulated, or flocculent within; and so the interior of these adventitious serous membranes presents a great variety of appearances;—being occasionally rough, with minute granules; and sometimes with large caruncles, as it were. The granules which adhere to the interior of these serous cysts, are frequently of an osseous character; or contain, at least, more or fewer particles of bone. Occasionally we observe false membranes lining the interior of cysts; that is to say, fibrin has been poured out; giving them exactly the appearance which you have in inflamed serous membranes, and which I spoke of formerly. There are frequently partitions in these cysts, dividing them into so many compartments. Frequently there are prolongations from the interior, running through the cavity of the cyst, and not completely dividing it; but causing it to have a number of compartments, communicating more or less with each other.

You will find the *contents* of these new serous membranes very various, as well as their internal surface. Occasionally they contain merely a serous fluid;—occasionally they contain blood. They will contain something like mucus;—various saline matters, fatty matters; tubercular matter; and some things which are peculiar to cysts.

There is a far greater variety in the contents of these serous cysts, than in those of the natural serous membranes of the body, when the latter happen to be diseased. You may find different substances in different portions of the same cyst. You may also find some cysts growing from the inside of others,—hanging in them by peduncles; and sometimes, instead of hanging in this manner, they are attached to the interior by a flat surface of considerable extent.

It has been imagined that all the new formations of the body are originally nothing more than cysts; and these cysts have been called *hydatids*. The term "hydatid" should be confined to a certain animal; but it is used vaguely to embrace not only real animals, but also these serous cysts; which are nothing more than morbidly formed serous membranes. Now it has been imagined that all the new formations of the body were originally hydatids;—that is to say, either parasitic animals, or such new cysts as I have mentioned. One compartment of these cysts, it is true, will sometimes be filled with scirrhous matter, another with melanotic, and another with encephaloid; and we continually see minute serous cysts by the side of schirrus, melanosis, &c.; and hence it has been supposed that these are merely different stages and forms of the same disease. But I do not see any proof of it; for when a part has once fallen into a state of disease, all kinds of disease will frequently spring up around and in it. It has been supposed, where we cannot detect any new serous membrane, but where we see the solid substance of scirrhus, for example, that it was nothing more originally than a serous cyst, filled with indurated substance;—that the transverse bands are nothing more than new serous cysts, which grew on the inside, and hung by peduncles; and which became filled with an indurated substance, until the whole formed one mass;—that the fibrous bands we see in scirrhus, are nothing more than different serous cysts, all compacted in this way. You should consult, on this subject, the works of Dr. Baron;* and a paper by Dr. Hodgkin, in the "Medico-Chirurgical Transactions."† Their views are ingenious; but whether altogether true, I will not pretend to say. Dr. Hodgkin followed Dr. Baron; and, as far as I can comprehend his paper, has only developed Dr. Baron's views.

You will understand, then, when you see minute sacs in various parts of the body, that they are usually nothing more than new serous cysts. You will see them continually in the choroid plexus in the brain; and you will see them from the most minute size, till they attain a very considerable magnitude.

With respect to the transformation to *mucous* membranes, when a natural mucous membrane is destroyed, it is very common for nature to supply a new one. This is, of course, not always a disease;—any more than inflammation is always a disease. When a fistula takes

* "Inquiry, illustrating the Nature of Tuberculated Accretions," (1819); "Illustrations of the Inquiry," &c. (1822); and "Delineations of the Origin and Progress of various changes of Structure," &c. (1828).

† Vol. xv.; page 265.

place by the side of the rectum, or in the perineum, it will acquire a lining membrane of a mucous character. Even in an old purulent cavity, you will sometimes see a lining of this character. In the lungs, when an abscess takes place and does not heal, but remains for a considerable length of time, the internal secreting surface acquires the character of a mucous membrane.

When a new mucous membrane is formed in the lungs, you will sometimes have a cavity exist for years; and both the fistula and the cavity will be lined by something like mucous membranes. In all instances of this newly-formed mucous membrane,—formed through disease, although by a restorative process,—you will find it to be one of the most simple character. You will never see a new mucous membrane so perfect as that of the intestines;—it will never exhibit such villi. In its utmost state of perfection, it will be only like the mucous membrane of the urethra. The urethra presents one of the most simple specimens of a mucous membrane; while the mucous membrane of the intestines, presents an example of the most perfect description.

If a mucous membrane be exposed to the atmosphere, it acquires all the characters of *skin*. As I before stated, skin and mucous membrane may be always classed together; but if a mucous membrane be completely exposed to the air, so as to be dried, it becomes exactly like skin. You will often have an opportunity of seeing this, in the instance of prolapsus of the womb. When the womb falls through the vagina beyond the external opening, and there remains,—is not kept up by art, you will find the vagina become dry, shrivelled, and pale,—exactly like skin; and I presume that if it were allowed to remain there permanently, you would hardly be able to tell the difference between it and skin. When the skin is destroyed, it may be reinstated by fresh skin.

Conversion to *fibrous* membrane is very common; and it is the cellular membrane particularly, which undergoes this process. The cellular membrane will become indurated, so as to form cords; or so as to form a continuous membrane of a fibrous character; and frequently we have it indurated and accumulated into a mass. In all these cases fibres may be seen; and in the midst of these fibrous bands may be observed cellular membrane, not yet perfectly changed. You may also have tumors consisting of fibrous membrane, or of cellular membrane yet imperfectly converted into fibrous; and you may have them pretty uniform throughout,—homogeneous; you may have them in lobes; or again, in granules. Sometimes they will become a little vascular, and sometimes *very* vascular; —differing exactly as we see various *natural* fibrous membranes differ. They are more or less firm, according to the change which has taken place. Sometimes you may tear them to pieces; and sometimes you may reduce them entirely to pulp; but they are exceedingly hard occasionally, and you cannot do this. The structure surrounding one of these tumors, is often perfectly healthy; but sometimes it will be actively inflamed, and sometimes it will waste away. These

tumors will occasionally take place after accidental inflammation; and sometimes they will occur without any obvious reason whatever. We sometimes see that, after the cellular has, in this way, been converted into a fibrous membrane, it becomes still harder; and forms cartilage, and even bone.

The transformation to *cartilage*, is also a very common morbid process; and takes place exactly under the same circumstances as the conversion to fibrous membrane. Very often it succeeds it; and is present with it. What becomes fibrous membrane at first, will often become cartilage afterwards. Cartilage, if of diseased origin, is very often formed of cellular membrane in the substance of organs; and frequently between the different tissues; so that it is common to see it under a serous membrane. When you see the pleura, or the pericardium, cartilaginous or ossified, it is the cellular membrane immediately underneath the serous membrane, that is converted into bone. When cartilage is formed in this way, it is sometimes in mere little points, and sometimes in patches. This is a very common occurrence in arteries. You will see spots in the interior of an artery, of a different colour from the rest,—excessively firm,—of a cartilaginous character; and these are formed under the lining membrane of the artery. Cartilage is frequently formed like a fibrous tumor,—in lumps; so that you have hard knobs. It is very common, after chronic inflammation of a serous membrane,—when the whole is thickened together,—to find a knob of cartilage here and there. Serous cysts frequently have knobs of cartilage in different parts; and frequently they are cartilaginous to a great extent. These knobs are found in the substance of different organs; but I believe they are for the most part cellular membrane, extending most frequently from the surface into the substance, and there increasing in size.

You will sometimes see new cartilage loose in a cavity. It is very common to see it in a joint; and it is not uncommon to see it in the veins of the pelvis. I believe it is formed under the synovial membrane, in the one case; and under the lining membrane, or inner coat of the vein, in the other. It protrudes, till at length it has a peduncle; which peduncle becomes thinner and thinner, till the whole is detached; and then you have a loose cartilage in the joint, or in the veins. I sent to the University a specimen of the veins of the pelvis, in which were a great many cartilages, which you could move about from one portion of the vein to another, like peas. Transformations to fibrous membrane and to cartilage, so frequently run into each other, that you have fibro-cartilaginous transformations.

Induration, however, proceeds frequently farther than this. The natural change of cartilage into *bone*, is continually observed to take place in disease. After cartilaginous transformation has existed for a long time, you frequently find bone produced. It is said that the cellular membrane, fibrous membrane, and cartilage, are strictly and positively the only parts of the body that are ever converted into bone; but whether they are so or not, they are the parts which by

far the most *frequently* are so converted. The loose cartilages which I mentioned, as frequently existing in the veins of the pelvis, frequently become bone; so that you have hard bony substances loose in these veins; and these go by the name of *phlebolites*,—vein-stones.

When bone is deposited, the deposition may take place in the form of minute granules, so that the part is rough; and in this way you frequently find it in the valves of the heart. Or it may be deposited in the form of scales;—a character in which you frequently see it in the interior of arteries. When the radial artery is slit up, you frequently find bone deposited in minute scales, which you may pick off from the interior; and sometimes it forms continuous plates. I shewed you a kidney which had been converted into a bony cyst. There was a *continuous* deposition of bone. This is a proper word; because the bone is deposited in a continuous manner, like membrane; but it would be wrong to say *membranous*. Sometimes it is deposited irregularly,—in an *amorphous* manner.

It is sometimes deposited abundantly, forming very considerable masses. You will occasionally, in encysted tumors, find a lump of bone larger than a walnut; or perhaps as big as two walnuts. I have seen at least two or three instances of it. Bone thus deposited is sometimes homogeneous. If you cut it, it is without fibres,—without any reticulated portion at all. Sometimes you have it harder than natural bone. Sometimes it has rays or cross fibres, like diploe, with an external compact substance. You see an instance of nature's highest efforts and powers in forming new bone, in necrosis; where a deposition, to a considerable extent, takes place under the periosteum; and which deposit will become a perfect bone surrounding the old one. Diseased formations of bone are found to consist of phosphate and carbonate of lime, and of some animal matter;—just like healthy bone; but the proportion of phosphate and carbonate of lime is exceedingly various; so that you rarely find two cases of bone formed by disease, in which the proportion of the two is the same.

These are the chief observations which it was necessary for me to make on transformations. When structures are so converted, we say it is a *transformation;* and that it is into an *analogous* structure. That is to say, the structure which is produced, is analogous to a natural structure;—to a structure seen somewhere or other in the body during health. But besides these, we have *new formations;*—not formations newly made, (that is not the meaning of the term);—but formations of a new character;—something which is new to the body, and which is altogether of a diseased character. These are called *non-analogous* or *heterologous* formations.

NEW FORMATIONS.

The chief of these, of a solid kind, are *tubercles*, such as are seen in scrofulous cases; *melanosis*, which is a formation of black substance; and sometimes a yellow substance, called *cirrhosis*. Besides

these, we have certain saline substances produced, which are unknown to the healthy body. For example, when speaking of calculi, we shall find a substance called *xanthic oxide*, and another called *cystic oxide;* substances unknown to the healthy body. Some of the liquid products of inflammation (pus, for example) are unknown to the healthy body. The secretion of serum and of lymph, in inflammation, may be compared to analogous transformations. They are liquids subsisting in a healthy body; although their appearance in the part is unhealthy;—at least, their quantity is unhealthy. But we have a substance produced in inflammation, that is unlike the natural fluids of the body;—is a *new formation*, and of a liquid character;—namely, pus. So that, you see, there is an analogy running through all these things. In inflammation we have the liquid products of the part increased. For example,—from a mucous membrane we have secreted more mucus than natural, and of an unhealthy quality; and from a serous membrane we have serum produced in abundance; so that these may be compared to those changes of structure, in which there is merely an alteration of size and consistence, and in which the part becomes hardened or enlarged. Again, I mentioned that there are some diseases in which there is a *deficiency* of secretion;—as, for instance, *ischuria renalis*, and dryness of the skin; and these may be compared to softening and atrophy of substance, where there is a deficiency of matter. Then again, we have, in inflammation, liquids secreted which are foreign to the part. For example, we frequently have lymph secreted; and though that is a fluid natural to the body, yet it is not natural to the part; and these secretions may be compared to those changes of structure, in which one part of the body assumes the character of another part; such as the transformation to cartilage or bone. Then, in inflammation, we have pus produced,—a new liquid; and (as I shall presently mention) in some diseases, a semi-fluid substance, like jelly; which substance is called *colloid*, from being like jelly. Sugar is sometimes formed in the urine; as well as the cystic and xanthic oxides, just alluded to. Cirrhosis, melanosis, tubercle, and encephaloid, are new solid formations. All these are called *non-analogous* or *heterologous;*—being heterodox matters. Now some of these formations may be organized;—they are *organizable*,—if such a word may be used. Scirrhus, for example, is of this description; fungus hæmatodes, as it is called, or encephaloid tumors, may also be organized; but tubercular substance cannot be organized. Scrofulous tubercles may become bone; but more frequently they are softened down, and pus is seen; but they are not substances capable of being organized, and forming part of the body.

TUBERCLES.

I shall begin the consideration of new formations with tubercles. The word "*tubercle*" has been employed in a vague sense. It is used by one person in one sense, and by another person in another; but there is now a great tendency to limit it to a scrofulous deposit.

All small tumours in the substance of organs and serous membranes, or indeed upon the skin, have been called, and are still called *tubercles;* but the French have adopted the custom of restricting the word to tubercles of a scrofulous character; and it is in that sense in which I now wish to speak of it.*

A scrofulous tubercle is of a yellowish white colour; and is usually round. It varies from the size of a millet-seed, to that of a nut; and it is sometimes even still larger. It is firm, but friable; for although it is tolerably hard, yet if you take it between your finger and thumb, you find it will break down;—unless it have been converted into bone; and then, indeed, it is no longer a tubercle. Its character is curdy or cheesy; and it softens down into a substance, which is non-analogous to the rest of the body. It softens down into a sero-purulent fluid; but in this fluid you still have the friable tubercular substance, forming flakes within it. When the matter is let out altogether, you see a curdy substance floating in it. When a tubercle softens down, the liquid of course has a tendency to escape, like the matter of an abscess. An abscess is formed, which either increases or remains stationary for a time; and at length, when it is discharged, there is an attempt on the part of nature to heal up the part,—to produce cicatrization. These tubercles not being an organized substance, and not being organizable, must increase by juxta-position;—exactly as stones would do, or any thing else inanimate.

It is supposed by some that a tubercle is liquid at first, and becomes harder afterwards. I should suppose that every thing in the body, when first secreted, must be liquid. One cannot conceive that vessels will pour forth solids. They all appear destined to hold liquids, however short a time the matter may remain so after its escape. It may, perhaps, become hardened immediately. Neither do I suppose that any thing can be absorbed but liquids. It is the opinion of Cruveilhier, an eminent morbid anatomist, that tubercles are liquid at first; and Andral, an equally industrious and sound morbid anatomist, entertains the same opinion. Although they become of a yellowish white colour, yet they are at first greyish, and semi-transparent; and the semi-transparency gives a farther reason for supposing, that they are originally formed liquid. It is clear that they do undergo changes;—first having a transparency, and then becoming yellow; and we may suppose that there are more minute changes still; but changes which occur at too early a period, to render it possible for us to discern them.

They soften down, it is said, by a deposition and secretion around them, penetrating and breaking them up. But I am not myself satisfied that this is a true account; because we find them continually softened in the very centre, without any liquid which could

* Tubercles in all their varieties,—the forms which they assume,—the changes which they undergo,—together with the opinions of the French pathologists as to their nature,—form the subject of a paper (to which the reader is referred) in the thirty-eighth volume of the "Edinburgh Medical and Surgical Journal."

have got into them. We find them firm externally, and liquid within. I should therefore suppose that the softening of the tubercles was really a chemical change; and their not being organized forms an additional argument in favour of this opinion. If there be a deposition of external liquid matter, which goes into them, certainly the external part ought to be softened down as soon, at least, as the interior; but they generally soften at the centre. However, it is not invariably that they are softened down at the centre; for they will sometimes soften in other parts, especially upon the surface. When they are softened down, an abscess is formed; and the tubercular matter escapes. It is very common for fresh tubercular matter to be deposited within the cavity, after the discharge of the contents of the same character.

When tubercles are not softened down,—when they are firm, they are found to consist chiefly of animal matter; with some muriate of soda, phosphate of lime, carbonate of lime, and traces of oxide of iron. This, however, matters little. It is right to ascertain these points as far as possible, in the hope that it may lead to some important discovery hereafter; but still we do not yet understand their nature better, by understanding of what they consist. Some have an exceedingly firm cretaceous earthy matter. Of course, the same substances are found in all of them; but in proportion as they are firm, do the phosphate and carbonate of lime abound, compared with the other materials. Dr. Carswell has made some beautiful drawings representing tubercles in all their various stages; as well as numerous specimens of transformations and new formations; such as ossification of the trachea; an ossified cyst; ossification of the valves of the heart; and an ovarian tumour containing bone; for teeth, and even hair, have sometimes been found in tumours of this description.*

Now these tubercles are seen almost every where;—you may find them in almost every part of the body; but they are more frequently found in free cellular membrane, or in the cellular membrane which is a component part of different organs. Besides these situations, they are found in the liver, in the brain, in the kidneys, in the testicles, and in the lymphatic glands. They are also found in the air-cells of the lungs, and in the parieties of these air-cells; and they are found also in the lymphatic vessels themselves.

In adults they are by far most frequently found in the lungs; and next to the lungs, in the small intestines. In 350 adults with tubercles in various other parts of the body than the lungs, Louis, the celebrated French pathologist, found only one whose lungs were free from them. When tubercles exist in adults, therefore, they are most frequently found in the lungs; and next to them come the small intestines. Speaking still of the adult, after the small intestines

* We must refer our readers to the splendid series of pathological plates which Dr. Carswell has published. It is entitled, "Illustrations of the Elementary Forms of Disease. With coloured Figures of the natural size, and descriptive Letterpress. By R. Carswell, M.D., Professor of Pathological Anatomy in University College, London."

comes the mesentery in point of frequency of this affection; so that all other parts stand at a very great distance from the lungs, with regard to the frequency of tubercles in them. The intestines and mesenteric glands stand at a certain distance from the lungs, in point of liability to this disease; but all other parts stand even at a greater distance from them. So great is the tendency to them in the lungs, that Louis has made the calculation I have just stated. The liver is a part in which scrofulous tubercles are less frequently found than in any other; but they are by no means uncommon in the spleen, particularly in infants. In infants, it is very common for other organs than the lungs to contain tubercles, while the lungs remain free; which is just the reverse of what is observed in adults. In infants you more frequently find many organs affected at once than in the adult; in whom nothing is more common than to find them only in the lungs. In infants, too, the proportionate frequency of tubercles in different organs, is not the same as in adults. The frequency does not pursue the order of lungs, intestines, and mesentery; but follows quite a different rule. For example, they are far more frequent in the spleen, in the mesenteric glands, (or, as they are called, the mesenteric ganglia), and in the bronchial ganglia. They more frequently affect those three parts, than the lungs; and they are much more frequently found in the nervous centres (the brain and the spinal marrow) of infants, than of adults. They are very rare, however, in the fœtus during its first months; but about the fourth year, they become far more frequent; though they are not then very numerous. From the fourth to the fifth year they are found to be very frequent; and attack many organs at once. So frequent are they in children at this period of life, (at least in Paris), that Lombard says three-fourths of them perish from tubercular disease; or, at any rate, there is a tubercular deposit found somewhere or other, after death. After this age they become less frequent, till the period of puberty; though they are still more numerous than before the fourth year. From the fourth to the fifth year, as we have said, they are very frequent; then they decline for a time; but still they are more frequent than before the fourth year. It is found that children are more free from tubercles during the second year, than at any other period before the fifth.

Tubercles are said to occur in men chiefly from the age of 21 to 28, and in women especially before the age of 20. In men they appear later than they do in females. They are not confined to the human subject: they continually arise in brutes. I believe that, both in this country and at Paris, monkeys generally die of tubercular disease; and tubercles are found in a large number of their organs. They occur also in horses, pigs, cows, rabbits, hares, sheep, and birds. It is said that a great number of the parrots which die at Paris, have tubercles. Parrots, like monkeys, come from a warm climate; and become affected by the coldness and vicissitudes of such latitudes as Paris and our own. It is said, but I do not pretend to know much of such matters, that they are not found in dogs.

The predisposing cause to tubercles, certainly appears to be a want of proper food, and a want of proper external temperature. If an animal be kept in the dark, and likewise in a damp situation, so that it is exposed to cold and damp, and particularly if it be fed on not very nutritious food, you may in many instances produce tubercles at pleasure. I believe that the great and almost the only cause of tubercles, in the human subject, is the want of good food, and of a proper external temperature. Exposure to cold and moisture, and particularly, perhaps, *alternations* of temperature, will produce tubercles. When the disposition to them is once produced, it becomes hereditary; and you see children, with every comfort around them,—well fed and well clothed,—become, at a certain age, the victims of tubercular disease. The disposition, when once established, certainly becomes hereditary; but, without any hereditary predisposition, thousands and tens of thousands die of tubercular disease, from exposure to cold, united with moisture, and the want of good food; and in all probability, in a great measure, from vicissitudes of temperature. However, the influences of these causes may be much diminished by good food;—by keeping up a good fire within, we suffer much less from an external low temperature. It is food which is required for this purpose; not mere stimulants, such as spirits or wine. These will not answer the purpose. It must be a good nourishment; which maintains a slow but constant fire (if I may so speak) within; and does not give merely a temporary excitement, which always increases the injurious effects of a subsequent low temperature. This subject, however, will be particularly spoken of when I come to the treatment of pthisis; which is the great tubercular disease of this country.

This tubercular deposit acquires an enveloping membrane, and frequently two. Sometimes you see no lining membrane; sometimes the deposit takes place in a diffused manner, and it is said then to be infiltrated; but in the lungs you, more frequently than otherwise, see the tubercular deposit surrounded by a membrane. You will see a regular capsule; and in the interior of this capsule, you often find a softer membrane, which may be easily peeled off, while the external one is frequently pretty tough. When it is formed, tubercular deposit may remain for years without injury; but if the deposition be very great, it forms a source of irritation. If a great quantity be deposited in different parts, (and often, indeed, where the deposit is trifling), the surrounding substance falls into a state of irritation; the tubercular substance softens; and that process takes place which I have already mentioned.

The cavity, when the matter is discharged, is for the most part irregular. It is not of a definite shape, but irregular. Its parieties generally grow harder and harder; and you frequently see the tubercular substance not entirely discharged, but adhering pretty firmly to the sides. These cavities frequently have sinuses communicating with the external surface, or with the large bronchial tubes. When the tubercle has been near the surface, (which is very common

in the case of the absorbent glands), the ulcer has generally a flabby edge, which is turned inwards;—the very reverse of what takes place when an ulcer is cancerous; and it often heals up perfectly well. Even in the case of the lungs, we shall see that occasionally such cavities do certainly heal.

These tubercles are attended by no pain, so far as the deposition itself is concerned; but the irritation around is frequently a cause of pain; and if a tubercle be near the surface of the lungs, the pleura generally falls into a state of inflammation. There is more or less pleuritis; and the person suffers pain in the side. When a tubercle is producing much inflammation around, of course there must be the usual signs of inflammation. In the case of the glands of the neck, there is considerable pain when active inflammation is excited.

The disposition to form these tubercles, is called a scrofulous habit of body; and the person is said to labour under scrofula or struma, when labouring under such deposits as these. The marks of a constitution so disposed are, generally, a fair and fine skin, fine soft hair, a dilated pupil, and a large upper lip; and it is observed that, when the internal parts labour under scrofula,—not the external parts, but the internal viscera,—the extremities of the fingers and thumbs, and even of the toes, become enlarged. It is a remarkable circumstance, but it happens in a great number of cases of phthisis, and certainly in scrofula of many other parts,—such as the liver, and the mesenteric and lymphatic glands,—that the ends of the fingers become enlarged. I presume that a faint scrofulous inflammation attacks the last joint. Many persons, however, are scrofulous, who have neither a fair skin nor soft hair; but on the contrary a dark complexion. But still they look pale, and have dilated pupils and a tumid lip; and perhaps are pock-marked. Those more particularly disposed to it, however, certainly have a fair skin, a pulse disposed to be quick, and elongated fingers. When the disease, however, becomes established,—when tubercular matter is deposited, you see the ends of the fingers enlarged; so that the nail is prominent. It is like an acorn,—exceedingly convex; and the last joint altogether becomes broad. This disease, as I said, may undoubtedly be hereditary; and is so in a very large number of cases. It is a disease that attacks persons of all ages; but particularly in the early parts of life; while the disease of which I am now going to speak, is rarely seen in the young,—rarely seen before the middle period of life; and generally not until after the middle period is past.

SCIRRHUS.

In scirrhus it appears that there are two changes;—there is a *transformation* and a *new formation*. It would appear that the cellular membrane of the affected parts becomes exceedingly indurated, and is changed into a hard fibrous membrane; but in the midst of this there certainly is a new deposit, of a particular description. When scirrhus takes place, you will see a firm, exceedingly hard, unequal, irregular mass. It is of a light greyish colour at

first; and if cut into thin slices, it is semi-transparent. If you examine a section, you see a large number of fibres traversing morbid structure in different directions; and between these there is a substance less white than the rest. The deposition constituting tubercles is inorganic; it is not a new *organization*, but a new *deposition*. In scirrhus there is a transformed structure, at any rate; and besides that, there is an inorganic substance, deposited between the fibrous portions. These fibrous portions, running in different directions, form septa,—divisions; and you see they are opaque and paler than the others; that is to say, of a more dead white: in fact, a scirrhous tumour cuts exactly like a turnip. In a turnip you see fibrous septa, running in different directions; and a softer less white substance between them. The septa, in scirrhus, run in every direction; and sometimes are seen to form regular cells. The proportion of less hard substance between the fibres, is exceedingly various; and the mode in which the fibres are distributed, is likewise exceedingly various; so that you may sometimes have a mammary tumor, sometimes a pancreatic tumor, and sometimes a tubercle;—that is to say, a tumour something like a mamma, or something like a pancreas, or something like the tumour of scrofula;—you may have a tubercle, in the common acceptation of the word.

The less hard substance at last undergoes the same process, as a true scrofulous tubercle. It softens down into an ichorous fluid,—into something like jelly or gum; and the process here begins usually,—perhaps always, but at any rate usually,—in the centre; as is generally the case in scrofulous tubercles; the centre having been originally the hardest part. The skin above becomes puckered, or retracted; and its colour also becomes changed. It assumes a leaden, or livid hue. At first, the whole tumour is moveable; though it will not allow the whole of the fingers to be placed under it;—it will not allow the edge to be turned up. But, after a time, it forms adhesions to the neighbouring parts, and becomes immoveable.

CANCER.

Ulceration takes place in a scirrhus mass, exactly as in the case of a scrofulous tubercle; and when the ulceration begins, that state of things is called *cancer*;—schirrhus being the first stage (the stage of induration); and cancer the second stage (the stage of softening and ulceration). In this form of ulcer, the edges are everted and elevated;—you see the edges much raised, irregular, and turned out. The surrounding cellular membrane undergoes the process of suppuration. Now and then we see a sort of fungus sprouting up from the ulcer;—a hard gristly fungus. The centre of such an ulcer is deep; the discharge is generally very fœtid; and great irritation is produced. Sometimes, instead of a simple suppuration around, we have sloughing; and now and then nature succeeds in throwing off the whole mass;—the scirrhous tumour has not formed adhesions to the surrounding parts; but suppurates, or rather

sloughs out. The lymphatic glands, to which the absorbents of such a tumour run, generally become contaminated. They generally become indurated,—scirrhous; and undergo the very same process as the original part.

This is a disease which in general primarily affects those parts which are not necessary to life. It affects glands, the functions of which have been interrupted, or have never been performed; it affects the breasts,—particularly when a woman is past child-bearing; and it particularly affects the breasts of women who have never had any children. It also, where there is any predisposition, particularly affects parts which have suffered mechanical injury. Many women have had cancer in the breast after a blow, who in all probability would not otherwise have suffered. It particularly affects the breast, the uterus, the ovaria, the testes, and the thyroid gland; none of which parts are necessary to life; the breast, uterus, ovaria, and testes, being all for the sake of the next generation, and not for the sake of ourselves;—except, indeed, as a gratification. The thyroid gland is, of course, a part unnecessary to life. When, however, it has existed in these parts, it affects others secondarily; and then we find the lungs, liver, omentum, mesentery, spleen, pancreas, brain, the medulla of the bones, and the skin, become the subjects of the affection. Now and then it may affect these parts primarily; but as a general rule,—and one can only speak generally,—it only affects the parts which I have now mentioned secondarily. When it affects the skin primarily, which it now and then does, a sort of wart is the first thing which appears; and it becomes cancerous. If it affect the skin only secondarily, then I believe more generally you have a tubercle, in the common sense of the word;—a little hard lump. For example,—when the breast has been affected with cancer, the skin in the neighbourhood will become the subject of *tubera;*—little hard scirrhous lumps. We certainly often see cancer affect the cardia, the pylorus, and the rectum primarily; yet although it sometimes does so, it is by no means so frequent an occurrence, as the affection of those particular organs which are not necessary to life, and whose functions may cease without the body at large suffering. When it affects the alimentary canal, it attacks particularly certain portions, which form divisions of it. For example, it affects the lips, which are the first part; next to them it will affect the fauces, and the cardia;—the lips forming the commencement of the mouth, the fauces of the throat, and the cardia of the stomach. Then it affects the pylorus,—the commencement of the intestines; and then, again, it affects the rectum; which is the termination of the canal. It is a curious fact that it is generally the *apertures* of cavities that are affected. We shall see, when we come to consider diseases of the heart, that it is the openings which suffer, far more than any other portions of that organ.

Speaking of secondary cancer, it has been observed that, when the breast has been the subject of this disease, the bones often become affected. They become flexible, and easily break; and the fracture

discloses a bloody mass in the medullary cavity. The affection spreads around; so that muscles, cartilage, and bone, are all blended together into a cancerous mass. You will find a paper on this subject, by Mr. Salt, in the fifteenth volume of the "Medico-Chirurgical Transactions."

This disease is attended in general, almost from the first,—from the very earliest stage,—with severe pain;—pain that is sharp, lancinating, and of the most dreadful kind. The pain certainly does not depend upon inflammation; for it will occur where no inflammation can be discovered. When the stage of irritation has arrived in which there is inflammation, sloughing, and suppuration, the irritation is so great, that the whole constitution suffers materially; and the skin acquires a peculiar sallow tint;—a sort of pallid yellowish straw colour. This state of the body is decidedly cachectic; that is, the whole body is in an unhealthy state. Andral ascribes this sallow appearance to a change which the blood undergoes;—the constituents of the vital fluid being absolutely altered. There is a sallow look, by which any experienced person will suspect, that the individual is labouring under some malignant disease. This has been called *cancerous cachexia*;—"*cachexia*" meaning a bad habit of the whole body.

I mentioned that the diseased part sometimes sloughs out; and the person recovers. That, however, is so rare a circumstance, that even if the surgeon remove the disease, the relief is but too often temporary; for, in the greater number of cases, the disease re-appears, either in the same neighbourhood, or in an opposite part. It would appear that it depends, in a great number of cases, upon some constitutional tendency; and all that art can do is to remove those parts which have fallen into a diseased state; but as the tendency remains in the constitution, persons generally show the disease again, sooner or later, in some other situation, or around the spot of the operation. This disease, like scrofula, may be hereditary;—I mean, of course, the disposition to it; and it is not known (at least, as far as I am aware) what circumstances give a predisposition to it. Those which give a predisposition to scrofula, are evident enough; but I am not aware of any circumstances, which are known to give a predisposition to scirrhus and cancer. Unquestionably, the disposition may be hereditary. I have known many persons die of cancerous disease, one of whose parents had previously died of the same affection. You will find several drawings by Cruveilhier, illustrating the various stages of this affection.*

ENCEPHALOID DISEASE.

The next disease of which I shall speak, is one which differs from scirrhus and cancer, in affecting the young rather than the old. It is what is called *fungus hæmatodes*, or *encephaloid* disease. It has

* "Anatomie Pathologique du Corps Humain; ou Descriptions, avec Figures Coloriées et Lithographiées, des diverses Altérations Morbides dont le Corps Humain est susceptible."

been called *encephaloid*, because the deposition is not hard, like scirrhus, but to a certain extent resembles the brain. It has also been called *fungus hæmatodes ;* because, when it arrives at the stage of ulceration, a fungus, of a bloody character, sprouts out; and, on cutting into it, you see large distinct cells filled with effused blood. It is, therefore, like brain in some parts, and is bloody in others. The deposited matter is like brain; but in the cells in which the deposition takes place, hæmorrhage continually occurs; so that blood is effused there, and a coagulum forms. There is a great disposition to hæmorrhage, in this disease; but the deposit itself is an opaque, whitish, homogenous substance; and may be compared, in colour and consistency, to cerebral pulp. There is an excellent representation of the affection, by Dr. Carswell; taken from cases in which it was situated in the brain and liver. I have opened many brains and livers, containing tumors about the size of a walnut; which, on being cut into, presented a homogeneous brain-looking pulp. There is often nothing like the firm fibres of scirrhus;—no distinct white bands ramifying in the tumor; but a mass such as I have just described. When exposed to the air, it softens down,—just as the brain will do; and it may be washed away, leaving a filamentous texture. If you take a tumor of this description, and expose it to a stream of water, you may wash the pulp away; and then you see an exceedingly fine filamentous structure, which has contained the opaque brain-looking substance; but then this structure is not hard, like scirrhus, but exceedingly fine and delicate. The consistency of encephaloid substance varies, from that of a soft custard, down to the firmest part of the brain when perfectly fresh. One portion of this is sometimes pinkish; and sometimes portions will be as red as a clot of blood; but if the blood have been effused in great quantity, then you have regular clots of blood. You will frequently find various portions differing in colour, size, and consistency; and some are even cartilaginous;—that is to say, I presume there is a double formation,—a double disease; and that scirrhus is united with it. Now and then you will see bony particles. It occasionally happens that portions of what is usually a fine filamentous membrane, become converted into an indurated substance, like cartilage; and now and then there are little deposits of bone; for many of these structural diseases are all blended together. Sometimes you see portions of it in a regular cyst. Instead of fine filaments containing this brain-like matter, you see absolute cysts; and sometimes you see portions resembling the white of boiled eggs, —coagulated albumen. This deposit, as it grows, softens down; and, like scirrhus and a scrofulous tubercle, it generally softens first in the centre. When it softens down, cavities are formed; or perhaps we might say cavities become discernible. These cavities then chiefly contain blood; and on washing this away, you see filaments or shreds floating in the cavity. If a portion of it be near the surface, the skin grows discoloured, the tumor adheres to the subjacent parts, and increases in size; or if the tumor be situated within, the

serous membrane above it grows thin, till it gives way; so that the tumor may ulcerate through the surface; or a serous membrane within may give way.

When the tumor ulcerates, a fungus shoots forth; but it is not firm,—like the fungus of scirrhus; but, on the contrary, is soft, easily torn, and bleeds very much. It is irregular, and of a dark red colour. When the fungus is very small, it exactly resembles the red soft polypi which grow from a mucous membrane. It grows very rapidly, and pours forth a fœtid sanious fluid; and people sometimes die, not from the irritation of the tumor, but from hæmorrhage. I had a patient who died from hæmorrhage, occasioned by one of these fungi in the bladder. There was, in the interior of the bladder, a fungus as large as a walnut, which never gave him any pain, or produced any irritation to the constitution; but which bled in spite of every thing which could be done. He discharged, not only bloody urine, but pure blood; and at last sunk under it. The hæmorrhage from a fungus of this description, is often very copious. Now and then portions will slough.

This is a disease which affects every part of the body. It will affect the testicle; and then it is called by some, *soft cancer of the testicle*; or it may affect the breast, the eye, the uterus, ovaria, spleen, pancreas, liver, urinary bladder, brain, mesentery, and bones. It is very common in the eye of children. It is continually seen in the extremities; and the absorbent glands become contaminated, as they do in the case of common cancer. When the glands are affected, and you make a section, they disclose nearly the same appearances as the original tumor; but there is this difference, it is said,—that they never send forth a fungus.

You frequently have in the neighbourhood smaller tubera,—circumscribed, but without a capsule; varying from the size of a pea to that of a walnut; of a pale greyish colour; and firmer than the original tumor; but they are the same disease. This is a disease which commonly affects other organs secondarily; so that when persons have it in the breast, it is very common to find them gradually become the subjects of cough, and pulmonic disease; and, on opening them, you find similar tumors within. It is said that the organs which are affected secondarily, are never affected primarily;—it is so said. It is very common for many organs to become affected at once; and so great is the disposition to this disease, when there is any disposition at all, that Mr. Travers says he has never known a person survive four years, in whom he had operated for the extirpation of the disease. The constitution becomes impaired. There is a cachetic look, even earlier than in scirrhus. Usually the person becomes emaciated, but now and then there is hardly any irritation at all; and you will sometimes see a person die of this disease in the stomach, without having suffered any pain at all; and frequently without any person having suspected the nature, or even seat, of the disease. With respect to the case I mentioned of the disease in the urinary bladder, the man, although he died from the

hæmorrhage occasioned by it, never suffered the least pain. Even when the mass is very considerable, there is generally little or no pain; and sometimes there is little or no irritation of the constitution. The case differs, therefore, from schirrus very materially in another respect. Schirrus, I mentioned, is almost always attended with violent deep lancinating pain; whereas, in encephaloid disease, there is very little pain,—frequently none; and sometimes there is very little irritation.

A tumor of this description is exceedingly soft. Its external appearance is remarkably smooth and equal; and it gives you the idea of fluctuation; so that I have known surgeons of great experience deceived, in cases of this nature. They have imagined it was a collection of fluid, and plunged a lancet into it. I have seen this mistake occur over and over again;—from its extreme resemblance, with respect to the touch, to a tumor containing fluid. Frequently, for a length of time, the part will not be at all discoloured. It is soft and elastic; and it is these two circumstances that give you the idea of fluctuation. The tumor, when taken out, is generally more or less round; and (as I stated before) it differs from scirrhus, in occurring at an early period of life. You saw a kidney, taken from a child six years of age, in which several portions of disease were of this nature. It seemed to be a mixture of various diseases;—some portions were scrofula; some were of scirrhous hardness; and in other parts there was certainly fungus hæmatodes.

I do not know what gives the disposition to this disease. I am not aware of any external circumstances, which cause persons to be more liable to it; nor do I know whether it is hereditary. It is very probable that the disposition to it is hereditary,—exactly like the disposition to scirrhus; but it is carefully to be remembered, that this is not a painful disease, like scirrhus; and that it is a disease which affects the opposite period of life, to that in which scirrhus particularly prevails. Some consider it to be a mixture of scrofula and cancer.

MELANOSIS.

The next new formation of which I have to speak, is called *melanosis*, or *melanodes*; in which is deposited a mass of black substance; which, if cut, gives an unctuous smooth section; either uniformly dark-coloured, or presenting certain shades; so as to be mixed up with patches, or streaks of paler coloured substance. Sometimes it is deposited in lobules, or a mass; and sometimes in plates. If you macerate a mass of this description, the black portion is seperated; and this readily mixes with water, and stains the hand, linen, and paper;—just like Indian ink. It has neither taste nor smell. I never tasted it myself; but this is said to be the case; and it is worthy of notice, for considerations which I shall presently mention. It resembles in every respect the pigmentum nigrum of the eye, or the dye of the cuttle-fish; and the colouring matter of the hair, of the skin of negroes, of some parts of the brain, the bronchial glands (or

ganglia of the lungs) of old people, and the placenta of some carnivora, may be similar. When you have washed it out by water, the structure which is left after the separation of the black substance, is circumscribed; and is more or less firm. When I say *circumscribed*, I am supposing that you take a piece of an organ; that you wash the part that is healthy, and thus wash out the black portion; and then there will remain a circumscribed substance, more or less firm, different from the rest of the organ in which the black matter lay.

Although the character of this disease is blackness, yet you do not always have a decidedly black colour. There are shades of brown, and even of a yellow hue, as well as the black. The masses, or depositions, are not only of all sizes, but also of all shades. Sometimes a black mass of this description, is thought to soften down; but that must be a rare occurrence. You have seen that scirrhus softens down; and that tubercles soften down; but this very rarely, if ever, softens. It is of course, a totally inorganic substance. It is like a tubercle in this respect,—that it never becomes organized; but it is unlike a tubercle in rarely, if ever, softening. A dark-coloured fungus will sometimes arise, from the part in which this black deposit has taken place; and so far it resembles fungus hæmatodes. The neighbouring glands will become affected;—at least, when I say the neigbouring glands, I mean the glands which are connected with the absorbents of the part. Sometimes we have melanoid tubera, or tubercles (using the word "tubercles" in its common acceptation);—melanoid deposition in remote organs, so that the disease appears (like fungus hæmatodes or scirrhus) either in a primary or a secondary form;—beginning in one part, and being found afterwards (though not of course in so advanced a stage) in distant organs. There appears to be an analogy between this disease and fungus hæmatodes, as to the organs which are primarily and secondarily affected. There is the same order observed with regard to both circumstances. You might sometimes commit a mistake, when you see an absorbent gland, or a ganglion affected with this disease; for you might take it for a mass of melanotic substance. The absorbent glands frequently have this substance deposited in them; and become blackened; and of course it is a gland blackened with a secretion of melanotic matter, and not a real mass of new matter, which is there. If you do not consider that the part which you are examining, is one in which an absorbent gland actually lies, you might sometimes mistake a mere blackened gland, for a mass of this peculiar melanotic matter.

This is a disease which does not occur early in life, like fungus hæmatodes; but rather resembles scirrhus in this respect;—seldom occurring till the individual has passed the middle age. It has been seen, like the other deposits, in brutes; and particularly in the horse. Of all brutes, I understand, it is most frequently found in the horse; and it is said to occur most frequently in cream-coloured and spotted grey horses; and oftener in horses in the south of Europe than here. I do not speak from observation of my own; for I have not

dissected many brutes; and I am not willing, of course, to intrude upon the province of other persons; but I presume there can be no harm in speaking incidentally in this way. So large are the masses which sometimes occur in horses, that they have occasionally been found, in the abdomen, to weigh thirty pounds. It is likewise seen in dogs, cats, rabbits, mice, and rats;—so curious have some people been, in the investigation of melanosis. It not only attacks so many creatures, but it is said to attack all parts of the body;—chiefly, however, the lungs and the liver. Dr. Halliday mentions an instance of most intense melanosis in the human subject; where it existed, almost universally, in the subcutaneous and inter-muscular cellular membrane,—in the cellular membrane under the skin, and among the muscles; in the peritoneum; in the pericardium, the pleura, the ovaria, the sternum, and the bones of the cranium;—so extensive sometimes is this deposition.

Sometimes, though rarely, this substance (I do not use the word "*matter*;" because that conveys the idea of pus) is enclosed in a cyst. Most other deposits have a cyst; but it is only sometimes that this is found to be so enveloped. Occasionally, instead of being collected into a mass, it is completely diffused;—not merely in small scales and plates, but *generally* diffused along a membrane, mucous or serous; and I presume, when this is the case, it really is deposited, not upon the membrane itself, but rather in the cellular membrane immediately underneath it. I should imagine so, because it is the cellular membrane that is liable to become cartilage and bone, and which is particularly liable to other diseases. This disease, too, is not unfrequently seen in new membranes of the body;—I mean false membranes. When a serous membrane has been inflamed, or has had lymph deposited which has become organized, then the false membrane becomes cellular membrane, as I mentioned before; and these new false membranes are sometimes seen to contain a melanoid deposit. However, it is said to be sometimes found on the surface of a serous membrane. It is right I should mention that I have not seen it; but it is said to have been found, not *underneath* the membrane, but lying on the surface. The parts around probably do not undergo any change except softening. Around this black deposit, the real natural parts of the body are found softened; but in general that is all, unless this disease co-exists with another; and it is a very common thing for it to co-exist with scirrhus, with fungus hæmatodes, and even with tubercles. Where, however, it exists alone,—where it is conjoined with no other disease, it seems to occasion nothing more than a mere softening of the surrounding parts.

Occasionally this same substance would appear to exist in a fluid form. Occasionally we have a cyst filled with a liquid perfectly black; in which no difference has been observed from the mass I have now described, except that the one is liquid and the other solid. When this melanoid matter has been found in a fluid state, there is every reason to believe that it was formed originally fluid,

and not softened down; because the usual course of the disease is for the mass to remain solid, however long it may last. When we see black fluid contained in a cyst, therefore, we must conclude in general, that this substance had been originally formed with a disposition to remain fluid.

Now we continually see upon a serous membrane, spots of melanosis; that is to say, perfectly black spots, which appear to be quite analogous to this affection. Indeed, one can hardly open many bodies, without seeing these spots upon certain serous membranes; particularly the peritoneum towards the pelvis, the uterus, the bladder, and the rectum. These appear to do no harm; they are perfectly innocent deposits; and sometimes we see very extensive deposits, superficially diffused; and in persons who are known not to have suffered at all from that circumstance.

It is frequently seen in mucous membranes, after they have been injured. After a mucous membrane has ulcerated, and has healed, (which is very common in the intestines), the cicatrix is frequenly blackened, more or less, with a deposit of this description. The deposition, as I mentioned before, is sometimes not exactly black, but merely greyish;—sometimes brownish, or even yellow; and this we see in the skin after an eruption, and after ulcerations of various kinds. After an eruption, the skin will sometimes remain black, but more frequently brownish; and after an ulcer, it is very common for the legs to remain of a dark colour,—sometimes black, but more frequently of a brownish yellow. These, I presume, may be considered various shades of a similar deposit. The same is seen in the brain, after paralysis from effusion of blood into its substance. A deposition of this sort is sometimes seen in the mucous membrane of the intestines, after chronic diarrhœa. Occasionally, in the intestines, you see points (not so large as a scale) of black deposit; as if a very fine powder had been sprinkled, in the finest possible way, upon the surface of the intestines. I do not know that it indicates any thing particular; but, every now and then, you will see such points extensively disseminated. When I first saw this, I imagined it was some dirt or soot; but I found that I could not wash it off. It is not any thing exactly *upon* the surface; you see it *through* the surface; but you cannot rub it off, unless you destroy the membrane itself. I have sometimes seen the middle of the tongue of a jet black, without any unhealthy state of the rest of the organ; and without sordes, or any dangerous symptom.

I think there is a very curious circumstance analogous to this. I have never seen it; but there are, perhaps, nearly twenty cases on record within my reading, (and beyond it there may be far more), of white persons who have become black. A change will now and then take place over the whole of the skin; so that a white person shall become entirely black. I have seen portions of the arm become black; but I have never seen an extensive change of that kind throughout the body. Others suppose (and I coincide with them) that this is a malanotic disease, on a very extended scale;—that

melanoid substance is diffused solely upon the skin, and in the most extensive manner. When we consider that if the disease be formed in a mass, it always bears a resemblance to the pigmentum nigrum of the eye, we must suppose that when a white person is converted into a black, it is nearly the same affection.

Persons occasionally discharge from the stomach, or the intestines, a black liquid; and the discharge of this is called, in old authors, by the peculiar name *Melœna*,—the black disease. This stuff, when perfectly black, has (I believe) no smell; at any rate, when it happens to be discharged pure, without fæces, it has no smell; and cases have been noticed, in which a large collection of precisely similar black liquid matter, has been found in the peritoneum. Some such cases are upon record. I know that Dr. Prout has seen two or three instances, (though I have not seen any myself), in which the urine was perfectly black;—not bloody, but black. The black secretion of the bronchia, in some people, is probably dependent on the same dye. When we come to consider yellow fever, we shall find that persons vomit stuff of a black colour, which is called *black vomit*. It is found to be tasteless; so that some have indulged themselves in drinking it. Others have put it into their eye, to see if it were acrid; and others have made an extract of it, and formed it into pills, and taken several in the course of a day; and they all concur in stating, that it is just like the melanotic matter which I have just spoken of, as deposited in solid masses;—tasteless, inodorous, and perfectly innocent when taken into the stomach.

I believe, with respect to the discharge from the intestines, that you may have it entirely black, or a little reddish,—so that you observe a slight hue of red in the black. Indeed, you may have it of various kinds, down to absolute blood. I think that these discharges which take place from the alimentary canal, are blood that has undergone a certain change. Persons are exceedingly exhausted by this black discharge; but as it comes away through the intestines, it produces no pain, and (in general) no irritation;—nothing but exhaustion. It is admirably remedied by small and frequent doses of oil of turpentine;—just like hæmorrhage from the same parts. It appears to be (and I believe we must look upon black vomit as similar) an exceedingly mild substance;—as nearly like the blood as possible, except in colour. What the change is that has been undergone, I do not of course pretend to know; but the black urine, the black discharge from the intestines, the blackness of the skin when a patient is converted, partially or generally, from white to black, the blackness on the peritoneum, and of the mucous membranes, of cicatrices in various parts of the body, and the black masses and substances in various organs,—all appear to be the same affection in different forms, and in different degrees; and it would appear (in many instances at least) to be merely blood which has undergone a very slight change. As taken from the horse, it is found, by analysis, to contain the elements of the blood,—fibrin, albumen, &c.; but nearly one-third is a highly carbonized substance,

probably altered cruor. Every other constituent is in far less proportion. In the cells of the ovaria, we often see a black substance, —frequently blood; and all shades may be traced between the two; so that blood here appears capable of being changed to this black substance.

Melanosis appears to be perfectly harmless, except from the quantity of the substance which is formed. There may be an inconvenience arising from its bulk, its pressure, and its hardness; and of course when it is discharged, in a liquid form, there may be exhaustion from its quantity; but independently of that, I believe that the disease is not one of any malignity. Still it is to be remembered, that it is very frequently united with malignant disease; for, in a mass of fungus hæmatodes, you will often see a black deposit. This is not to be wondered at, when you consider that, in fungus hæmatodes, there is blood effused into the different cells. It is also seen in scirrhus, as well as encephaloid disease; and you continually see all these diseases mixed together in the same individual;—scirrhus, melanosis, and encephaloid disease, in one mass; but when confined to itself, I believe it is thought, by the greater number of persons, not to be a malignant disease.

KIRRONOSIS.

There is a disease, in which a substance is deposited of a yellow colour, in spots or patches, in the substance of the viscera, or upon the skin, or upon different membranes. A German author (Lobstein) says, that he has seen various parts of a membrane so coloured; and he calls this affection *kirronosis*. It seems particularly to affect the membranes of the head, chest, and abdomen; and when jaundice occurs in young children, Andral imagines that it is really this particular disease, and not true jaundice. I can give no opinion about it. There is a species of jaundice which occurs in young children, and which is speedily got rid of by castor oil, or even if no measures were adopted, would often cease spontaneously in a day or two; but besides that, there is sometimes jaundice, the disposition to which is congenital; for many families have died of it in succession. There are many children who are said to have jaundice; but which affection is supposed to be an instance of this yellow disease. Laennec calls it *cirrosis;* and says it is deposited in masses, or layers, or sometimes in a cyst,—such as we occasionally see in melanosis; and he conceives that a hard tuberculated liver, such as is seen in gin drinkers, is an instance of this affection. I recollect having once seen, in the liver of a child who had scrofulous tubercles of the lungs, a cyst filled with this peculiar yellow matter. It is altogether a rare disease; unless the small brown tubercle of the liver be it; but of course it is right that I should mention it. I should imagine that it was an innocent affection;—that the deposit was as innocent as that of melanosis.

When you find these new formations (tubercles, schirrus, fungus hæmatodes, melanosis, and kirronosis) co-existing in the body, it

is nothing more than a fact analogous to the circumstances I have stated, respecting *transformations.* I mentioned that the various transformations sometimes co-exist in the same organ; that you will see cartilage in one part of an organ, and bone in another. And so with respect to mere changes of size and consistence. You will find them co-exist in the same organ; so that one part of an organ will be indurated, and another softened; one part hypertrophied (over-nourished), and another atrophied (wasted). You see the diseases of consistence, and of size, and the diseases of transformation, all blended together;—just as you see the diseases of new formations. And not only so; but you often see new formations, and diseases of change of consistence and of size, all blended together in the same person.

The diseases of which I have now spoken, are those which may affect almost any part of the body; namely, inflammation, scrofula, changes of consistence and of size, transformations, and new formations. I have spoken first of diseases which will affect any part. I do no not mean to say, that each of these diseases will affect any one part; but they may be situated either here or there. Besides these, however, there are other diseases which may be called *general;*—not from their being common to any part of the body; so that they may affect one person to-day in one part, and another in a different part to-morrow, (as is the case with inflammation);—but because they are general in another sense;—they appear to affect the whole body together. Whether these general diseases have their origin in some one spot, I do not know; but, so far as I can observe, they exist more or less throughout the whole body. One of these is a disease called *anæmia*, bloodlessness; a very curious disease; and there is another called *scurvy.* I do not myself know whether these diseases spring from the state of any one part of the body, more than of another; for we see a person bloodless throughout, without any local affection that can be discovered. You see him become pale,—blanched throughout, and excessively weak; and we cannot say that any one organ is labouring under disease, rather than another. So in scurvy, the whole mass of blood, as well as of the solids, is affected; so that these are general diseases in another sense; or, perhaps, we ought rather to say, they are *universal* diseases;—those being properly *general*, which are able to exist here or there. Those of which I shall next speak, therefore, are rather universal diseases; and perhaps the distinction I have drawn between *general* and *universal*, will be seen to be proper.

Again, there is another set of diseases which may themselves be local; but which produce effects so universal, that if they have really a local seat, it is at one spot in one patient, and at another spot in another patient. I refer to fever; and, indeed, I may say *fevers;* for there are various kinds of what is called *fever;*—to say nothing of eruptive diseases. Many persons speak of fever (be it intermittent, remittent, or continued) as having a particular locality; but I do not think they have proved the correctness of their assertions; and ac-

cording to our present state of knowledge,—though ready, of course, to change my course, when more knowledge is imparted to us,—I shall prefer considering these also as universal diseases.

Besides those general and these universal diseases, there are other affections, which consist (so far as we know) of a mere affection of function; and in which, at least in many cases, there is no structural disease. It is possible that all diseases may be more or less structural. Some persons say so; but I cannot help believing that some diseases are entirely *functional.* With respect to diabetes, for instance, I have frequently opened persons who have died of it; and the disease appeared to be entirely functional. So in cases of insanity, frequently no disease of the brain has often been discovered. It appears to have been entirely functional. Of course the disease is corporeal,—just the same; but *corporeal* is not *structural.* A disease may be corporeal and yet merely *functional;* for there may be no change of structure.

There are other diseases, entirely *mechanical.* Hernia is, of course, a disease; but it is a mechanical affection altogether. I mentioned that even fractures and luxations are classed, in systems of nosology, as diseases; but at any rate hernia is called a disease; and it is entirely mechanical. There are other diseases which arise from another animal having taken up its abode with us. Such is the case with worms in the alimentary canal; and the existence of various insects upon the surface of the body.*

Thus you may have *general* diseases;—that is to say, diseases attacking any one part; and you may have *universal* diseases;—diseases which, according to our present state of knowledge, appear to be diffused throughout the whole body, without any particular locality. Again, we shall have to speak of diseases which are *func-*

* The late Dr. Fletcher, of Edinburgh, with the view of assisting the memory, used to include in a table all the parasitic animals (twelve in number) to which the human body is liable. We give this table below. The nomenclature adopted is that of Rudolphi; but we have added a few synonymes.

I. Cystica (Hydatids).
  1. Cysticercus Cellulosus (Bladder-tailed Hydatid).
  2. Echinococcus Humanus (Acephalocyst).
II. Næmatoidea (Cylindrical Worms).
  3. Hamularia Subcompressa.
  4. Ascaris Lumbricoides (Lumbricus).
  5. Trichocephalus Dispar (Trichuris Vulgaris; Long Thread-Worm).
  6. Oxyuris Vermicularis (Ascaris Vermicularis; Thread, or Maw-Worm).
  7. Strongylus Gigas (Urinary Worm).
  8. Filaria Medinensis (Dracunculus; Guinea-Worm, or Hair-Worm).
III. Træmatoda (Intermediate Worms).
  9. Dystoma Hepaticum (Fasciola Hepatica; Fluke).
  10. Polystoma Pinguicola (Fat-Worm).
IV. Cestoidea (Tape-Worms).
  11. Bothriocephalus Latus (Tænia Osculis Superficialibus; Broad Worm).
  12. Tænia Solium (Tænia Osculis Marginalibus; Long Worm.)

Succinct remarks by Dr. Fletcher on the localities inhabited by these different animals, together with various other interesting particulars respecting them, will be found in the "London Medical and Surgical Journal," for June 17, 1837.

tional, affecting particular functions;—not organic at all, but entirely functional; and affecting only special parts. For instance, diabetes, as a disease of the kidney, can affect no other part than the kidney; and insanity can affect no other portion than the brain. Spasmodic asthma, also, is often a functional disease. I have opened persons who have died of or with the disease, (and others have done the same), where no trace of disease could be found. You may have *mechanical* affections likewise; and the existence of parasitic animals, —*parasitical* diseases.

But I shall content myself with the general account already given of *inflammation* and *structural diseases;* and shall consider *functional*, *mechanical*, and *parasitical* diseases, not in general, but only in detail,—when speaking of the diseases of each part of the body. Previously to this, however, I must give you an account of *universal* diseases.

ANÆMIA.

The first of these universal diseases to which I shall direct your attention, is called *Anæmia;*—a word which explains itself;—the want of blood. Blood is present; but there is a great deficiency of it. I have no doubt that the fault resides in some one particular spot in the function of forming blood; but in our present state of knowledge, we can only speak of it as a universal disease. When a person labours under this affection, we might state, *à priori*, what the symptoms must be. In the first place there is great debility; in the next place the skin is soft and of a deadly pale wax-colour; in the next place the white of the eye is bluish, the inner part of the mouth is colourless, the lips are exceedingly white, and even the tongue is pale. The pulse is in general about 80; but exceedingly feeble, and very easily excited;—the least stimulus,—the least mental emotion, as well as corporeal movement, produces a great momentary acceleration. Respiration also is hurried on the least exertion. The appetite is bad; and it is said that there is constant thirst. There is œdema of the legs at last; and, finally, sweating;—sweating induced by the great debility. After death, the colour is much the same as it was during life;—the corpse is not paler than the living subject; for when this disease is intense, persons are really corpses in appearance.

So far, I think, one might before-hand pourtray the disease merely upon reflection, without ever having seen or read about it. But in certain cases of this disease, the stools have been observed to be dark-coloured and fœtid; the appetite to be bad; and almost every thing at last to be vomited. When persons have been opened, there has been found universal internal paleness, softness, and want of blood, and more or less excess of fluid in the serous membranes;—a fact corresponding with œdema of the legs, and with sweating in the last stages.

This disease, in a peculiarly marked form, occurred formerly in France, to a great number of workmen in one particular gallery, at a

coal-pit situated at Anzain, near Valenciennes. The disease was preceded by tormina, retching, green stools, thirst, and wasting, for ten or twelve days; and then the affection appeared as I have now described it. It lasted for six, or even for twelve months; and then ended in death. At length the proper treatment was discovered. You will find a description of this endemic disease, given by Professor Halle. It might be called *endemic*, from having been confined to a particular mine; and not only so, but to a particular gallery in a mine; as though it arose from some effluvia. You will find a similar case described by Dr. Combe, in the first volume of the "Edinburgh Medico-Chirurgical Transactions." The patient was a corn merchant's son; and no evident cause for the disease could be discovered. Mercury was given to the French patients, and did them a great deal of harm; for it is a state of the system in which mercury is very injurious. Opening one patient, and finding the internal vessels almost bloodless, they no longer gave mercury, but iron (carbonate, or rather oxide, of iron) in considerable quantity; with opiates and tonics, and good food; and the patients got well. They exhibited signs of improvement in the course of eight or ten days; and from that time the greater part, I believe, recovered. A similar occurrence took place at Dunkirk; and the treatment there was exactly the same;—the exhibition of iron; and the patients recovered equally well. It was found, however, that relapse was very usual; and that the remedy had therefore to be continued for a considerable time. I believe the patients at Dunkirk, were persons who had been sent from the mines to which I before referred; but the same treatment was adopted, and was followed by the same success. In anæmia from *loss* of blood, as well as from *deficient formation* of it, iron is one of the best remedies. I must mention that Dr. Combe used both the sulphate and carbonate of iron; but he does not mention the doses, or the length of time they were given. Mercury, which appeared to be injurious in France, was also exhibited; as well as a number of other drugs; so that the iron did not appear to have a fair chance.

CHLOROSIS.

There is a disease common to young women, either about the time they ought to menstruate, or soon after they have began to do so. It is called *Chlorosis;* and appears to be a state exceedingly similar to that of Anæmia. It occurs occasionally to persons more advanced in life; and a similar affection occurs also to men. Strictly speaking, it is not chlorosis in *men;* because we say that one of the symptoms of chlorosis, is an absense of the menses;—the menses not appearing at the proper time of life, or retiring just after they have presented themselves. Of course, that is not a symptom of the disease in men; and therefore we cannot say to quibblers it is chlorosis, when we see it in men. But let us consider *things*, more than *words;*—let us consider things as pathologists. It is a fact

then, that men will sometimes fall into a state of anæmia and debility, very similar, in all appearance, to that state which in women is called chlorosis.

When a woman has this disease, (which is so common, that you will see instances every day), there is general paleness. There is swelling of the face and ankles; weakness; a great sense of tension of the legs and feet; dyspnœa; palpitation; the pulse either quick or easily rendered so; and there is a deficiency of menstruation. Now these are the symptoms of chlorosis mentioned by authors; and they are, for the most part, exactly the symptoms that occur in the disease called *anæmia*. I have no doubt the pathology, or proximate cause of these two diseases, is exceedingly similar. In women who have chlorosis, the alimentary canal is often very much disturbed; and that was the case with the Frenchmen whom I have mentioned. There is sometimes a great derangement of the stomach; or, if the cause of hunger is cerebral, we must say a derangement of mental feelings. Patients will long for all sorts of things; such as chalk, sealing-wax, or brown paper;—and they are not always the worse for eating them. Their stomach manages them pretty well;—such is the departure from the natural state of things. Very frequently, too, they are costive. They will sometimes eat the most filthy things;—things that one would never think any human being would touch, except cannibals. They will even take pleasure in offensive smells; and long to eat what they do eat in a privy. That, however, is an intense state of the affection.

I believe the best remedy for chlorosis, is the same which was found useful in France; namely, iron. You will find no medicine whatever act so beneficially as iron. I am not sure that the carbonate of iron is better than any other preparation of that medicine; but with that I know you will generally succeed. It is a disease not to be treated by bleeding, or profuse purging. The bowels are only to be maintained in a regular state. You must not allow a collection of trash to be formed in them; but beyond that, purging does harm. All evacuants were found to do harm, in the cases of anæmia in France; and I know from my own experience, (which is necessarily very extensive, in so common an affection), that iron is by far the best remedy for chlorosis. Persons will lose their puffiness under it, —lose their difficulty of breathing; and will gain strength, and soon gain colour.

You will find an affection similar to this, when I come to treat of diseases of the heart. Persons will have violent palpitation, and become pale; and the state is not one indicating bleeding and purging; for in such a complaint as this, I know they will be made worse by those measures. But very much to my surprise, when I first ventured on the practice, and frequently to the surprise of others, iron has remedied this morbid condition of the system, to a great extent. It will not cure organic disease; but when the heart, and body at large, have thus become almost bloodless, and extreme

faintness has been induced by it, (so that you have a quick, irregular, and sharp pulse), you will find that the patient will experience the greatest relief, from the exhibition of iron.

You will observe that there is no confusion in all this. These diseases, although they are not spoken of by authors as analogous affections, are all of the same family. There is a want of the production of blood; though wherein the defect consists, I do not know. In the cases which occurred in France, one would suppose that some deleterious substance affected the functions of the body. In chlorotic women, frequently no cause can be discovered. In organic disease of the heart, patients will continually fall into a condition of the system, similar to that which we observe in chlorosis; but with palpitation ten times greater than ever occurs in that affection. In various visceral diseases, especially of the spleen and stomach, anæmia occurs.

SCURVY.

The word "*scurvy*" is said to be derived from some German words;—either from *scharf-pocke* (meaning *sharp* or *violent pock*) corrupted to *scharbock;* or from *sharf-pocke* (meaning *scab* or *scurf-pock*). However this may be, it is from the word *scharbock*, Latinized and corrupted, that *scorbutus* is derived; and a very barbarous word it is. From this we are said to have our English term "*scurvy;*" but I should rather think it came directly from the Danish word *scurv*. This name, "*scurvy,*" is used by the vulgar in a very indefinite sense; being applied by them to any ill-looking chronic cutaneous disease; but in our profession it is restricted to a particular affection.

This disease is characterized by a bloated surface; and by petechiæ, vibices, and ecchymoses. By "*petechiæ,*" are meant minute dark red or livid points, little larger than the point of a pin; spots still larger than these are called "*vibices;*" and when instead of spots we have patches, the word "*ecchymosis*" is employed. They all relate to the same appearance, but denote a difference in extent. With respect to colour, these points, specks, or patches, are of a dark red or purple hue; but may contain all the shades which we see in bruises. In this disease, then, the surface is bloated; and upon it are seen points, specks, and patches, generally of a red or purple colour, but sometimes of all the shades which we see in common bruises. A very remarkable circumstance also attends the disease; and that is, the hardness of many parts, but particularly of the thighs. If you examine the thigh of an individual labouring under scurvy, (though only in a very slight degree), I believe you will find it hard generally, but more especially under the hams. In severe cases, I have seen it as hard as a board. I have not seen many cases of the disease; but in all of them I have noticed this circumstance. The gums are particularly affected. They are spongy, and bleed; and either they or the breath, or both, send forth a very offensive smell. Such is the disease of the gums, that the teeth very frequently

fall out; and in addition to their being spongy and bleeding, they become enlarged and livid.

This is a disease of great debility; and the spirits are always very much depressed. So great is the weakness, that people very frequently faint from time to time; and the pulse is found to be feeble, and the surface of the body cold. Very often, ulcers form upon the surface, and discharge a thin and fœtid bloody fluid; and at last a coagulum of blood is formed. The gums are in precisely the same predicament. The blood which is discharged and coagulates upon the ulcer, is with great difficulty separated from it; for it adheres to the ulcer and the flesh which is beneath; and, when you remove such a coagulum, the flesh is found to be, like the gums, soft and spongy. If you remove the coagulum, it is instantly renewed. A fresh oozing of blood takes place; a second coagulum supplies the place of the first; and at length a fungus will sprout forth,—a soft, flaccid, dark looking fungus. It sprouts as fast as you take it away; and is called by sailors *bullock's liver*. It may attain an enormous size. If this fungus be repressed, a gangrenous tendency is frequently observed. The leg will swell, and become more spotted and painful. You know, of course, that when a fungus sprouts forth from the dura mater, after a fracture of the skull, it is very dangerous to repress it. If the part be compressed, dangerous symptoms very likely ensue. In like manner, it is found injurious, in scurvy, to repress this "*bullock's liver;*" because the pressure induces a gangrenous tendency. The very slightest bruise, inflicted upon a patient labouring, to any considerable extent, under scurvy, will generally produce an ulcer of the description I have mentioned.

There are some other remarkable circumstances, respecting this disease. Old wounds, and even fractures, have a tendency to recur under it. Wherever an ulcer has existed,—wherever a solution of continuity in soft parts has taken place previously, although the parts may have been well cicatrized, yet under this disease the wound often opens again. Nor is this occurrence confined to soft parts; but even bones themselves (as I just now stated) which were formerly fractured and repaired, become again disunited;—showing that the callus of bones is not so strong, as the original parts of the body; and that it suffers, when the rest of the bones do not. Another very singular circumstance connected with this disease, is the occurrence of nyctalopia, or night-blindness. Patients labouring under scurvy, frequently become blind (either altogether or in part) when night comes on.

The great cause of this disease, appears to be the want of fresh animal and fresh vegetable food. It is on this account that the disease was formerly very common at sea; for, at one period, sailors were supplied with nothing but salt provision. So badly were ships formerly provided for, and so faulty was the general management, that in the year 1726, when Admiral Hosier sailed to the West Indies with seven ships, he buried his ship's company twice; and then died himself of a broken heart. Deaths to the amount of eight

or ten a-day took place, formerly, in a moderate ship's company. The bodies, after being sewn up in hammocks, were washed about the deck, for want of sufficient strength, on the part of survivors, to throw them overboard. Lord Anson, in the year 1741, lost one half of his crew, by scurvy, in six months. Out of nine hundred and sixty-one men who sailed with him, only three hundred and thirty-five were alive at the end of the year; and at the end of the second year, only seventy-one were fit for the least duty;—not to say *duty*, but for the *least* duty. Sir Gilbert Blaine says that the disease used to appear in about six or seven weeks from the beginning of sea-victualling.

You cannot have a better description of the dreadful mismanagement formerly prevalent, in regard to the navy, than you will find in "Roderick Random," Smollett, both in that work and in his "History of England," gives an account of the armament which, about the same time that Lord Anson's expedition took place, was sent out against Carthagena. The description is from his own observation. He says the provision consisted of putrid salt beef, salt pork, and musty bread. To the salt beef the sailors gave the name of *Irish horse*;—I suppose that it looked like horse flesh, and that the contractors lived in Ireland. The salt pork came from New England; and was neither fish nor flesh, but savoured of both. The bread came from the same country; and the biscuit, like a piece of clock-work, moved by its own internal impulse;—owing to myriads of insects that dwelt within it. The butter was served out by the gill; and was exactly like train-oil thickened with salt; and though there was was water enough to allow each man half-a-gallon daily, for six months, yet each had only a purser's quart a-day; and this in the torrid zone, where a gallon would have been hardly enough to repair the waste of perspiration. You cannot wonder, therefore, that scurvy formerly prevailed to the dreadful amount we have stated.

The disease prevailed likewise on shore, however. Indeed scurvy, at one period, was one of the most fatal diseases in London; so that, even so late as the seventeenth century, there were from fifty to ninety deaths from it annually; and in the year of the plague, there were not fewer than one hundred and five deaths. These frightful occurrences took place regularly; and not during a particular year. The same reason existed for the prevalence of scurvy in London, which produced it at sea; for the food of the Londoners was then salt beef and pork, with a little veal. The lower orders, in the time of Henry VIII, had very little else. The fact was, that only pasture land was then common; for very little was cultivated. Animals, therefore, could feed only during the summer and autumn. Hay being a later improvement, it was impossible to feed them longer than that period; and, therefore, as the winter came on, they were killed and salted; and thus a store of provision was laid up until the next spring. Garden-stuff, too, was extremely scarce in those days; so that Catherine of Arragon, one of the numerous wives of Henry VIII, was actually obliged, in the beginning of the sixteenth

century, to send to the Netherlands for a gardener to raise her a salad;—so ignorant were the gardeners of this country, of what is now considered within the reach of every body. Cabbages, and other garden-stuff, were not cultivated in England before the reign of Henry VIII. Government, too, at that period, seemed to encourage the consumption of this meat; for the price of meat was fixed by law at one-*twentieth* of what it now is; whereas wheat was fixed at only one-*tenth* of its present price. Care was thus taken to have a good supply of *animal* food; but *vegetable* food was comparatively neglected. I may mention that, in 1700, a cabbage cost threepence; while, in 1760, it cost only one halfpenny. Such was the advance of art, and the increase of knowledge, that this great difference occurred in the price of a cabbage, at those two periods. Other greens too, at first, were proportionately dear; and vegetables were only used at that time on Sundays, and (as a great dainty) when people had company.

The use of salt or putrid meat, appeared to be the cause of scurvy. But it was not the salt; for salt, though taken in the greatest excess, will not occasion scurvy; and scurvy will take place where no salt is used. Nay, persons will have scurvy, who eat no meat at all; and therefore it is not this, but the want of other food,—the want of fresh animal and vegetable food,—that induces the disease. I have seen several,—not a large number,—but several cases of scurvy, in individuals who had eaten no meat at all. They had been deprived of meat of every description; and it arose in them from the want of food. You will find, in the second volume of the "Transactions of the College of Physicians," two cases mentioned by Sir Francis Milman, of women that had the scurvy in the country. They had eaten no meat whatever; but had lived on tea and bread, after having been accustomed to better food. Sea and land-scurvy, I believe, are exactly the same; and Dr. Musgrave (who published a work on the Gout, in 1703) mentions that this disease was common in Somersetshire; so that you observe it prevailed at sea, in large towns, and in the country.

There can be no doubt that many circumstances conspire to the occurrence of this disease. Cold and the want of exercise unquestionably encourage it; for sailors are observed to suffer in cold latitudes, when they are placed under precisely the same circumstances, with the exception of latitude, in which they escape it in warm climates. This fact strikingly illustrates the effect of cold. Then, as to the want of exercise, Captain Cook says that the people of Kamschatska, who are habituated to hard labour, never have the scurvy; while the Russians and Cossacks in garrison, who live in the greatest indolence, are subject to it. Sir Gilbert Blane says, that only the prime seamen, who were exempted from pumping, were attacked with scurvy. He instances the case of a particular ship's crew; and says, that the prime seamen suffered from the disease; whereas those who were obliged to work hard at the pump, from time to time,—the ship having proved leaky,—escaped. Moisture

is also said to have a considerable effect; especially, I presume, when united with cold. La Perouse attributes the prevention of scurvy, in his crew, very much to the vessel being kept dry by fumigation, and by braziers of hot coals. Captain Parry ascribes the first case of scurvy, in one of his expeditions, to moisture. It was observed, when scurvy prevailed at the Penitentiary at Milbank, a few years ago, that the persons employed in the kitchen always escaped; perhaps, however, they got better food than the rest, or more of it; but at any rate they had a warmer place. Captain King told Dr. Macmichael, (as he stated in a paper read last year at the College of Physicians), that, in a voyage round the south coast of America, no cause of scurvy was apparent,—the crew having had plenty of lemon-juice,—except that there was a remarkably cold and moist state of the atmosphere. I do not believe that moisture alone will occasion it; but moisture certainly aggravates the effects of cold in this disease; as it does in all others.

The difference between ships' crews now and formerly, is very striking. While the crew of Lord Anson suffered so much in a voyage round the world, that of Captain Cook, in a voyage subsequently performed, suffered nothing. The difference arose from this circumstance: Captain Cook had a good supply of portable soup, sour crout, and fresh meat; and he kept his men in regular exercise; and took care, at the same time, that extreme cleanliness and ventilation should be observed. In addition to this, they were away from land only about three weeks, on their longest cruise; although absent from home so long. Such measures as he adopted will generally prevent scurvy, even if there be no fresh provision on board, provided there is a supply of lemon-juice; and sometimes, in spite of the neglect of all these particulars, lemon-juice alone will prevent it.

The great remedy for scurvy, is fresh food,—animal and vegetable. Farinaceous vegetable substances alone are insufficient; but when fresh meat cannot be procured, I believe lemon-juice will be found the most efficacious medicine. The effects of lemon-juice on the disease are speedy and wonderful;—so wonderful, that the compiler of "Lord Anson's Voyage," after describing the disease, and the horrors which took place from its ravages, says that the cure of such a complaint seems impossible, by any remedy, or any management, that can be employed. Scurvy was formerly set down, without hesitation, as an incurable disease;—not only as a disease incurable *then*, but as being so formidable in its nature, that it *never* would be cured; and yet, in almost every case, we can now cure it with the utmost facility. It is not only lemon-juice that will cure it, but all the hesperidæi; such as the lime, and Seville and unripe China oranges. Malt and sour crout are thought to have a similar property. Lemon-juice is preserved by mixing one-tenth of spirit with it. The custom, I believe, is to give three table spoonfuls every morning to each man, for the purpose of keeping the disease away. One ounce of lemon-juice, with one ounce and a half of sugar, is the present navy allowance; and it is said that scurvy rarely occurs now in the

longest voyage. Citric acid is thought to be inferior to lemon juice. During the nine years previous to this supply, the average number of sick sent to the hospitals, was one man in three and nine-tenths of the whole navy; and in the succeeding nine years, it was only one in eight and four-tenths. The juice is also said to improve the general health. I may mention, as a good illustration of the power of lemon-juice, that the ship "Suffolk" left England in April 1794, and had no communication with land for twenty weeks and a day; and yet, during all this time, she had only fifteen sick, and those slightly. They were soon cured by an augmentation of the first allowance of two-thirds of an ounce; and at her arrival, not one had the scurvy. In 1800, the channel-fleet (consisting of twenty-four ships of the line, besides smaller vessels) had no fresh provisions for sixteen weeks; but they had plenty of lemon-juice, and not a single instance of scurvy occurred; whereas in 1780, the channel-fleet could not keep at sea beyond ten weeks, and was worn out with scurvy and fever. Two thousand five hundred men were sent into port with the scurvy. We read in Purchas's "Pilgrim," that Commodore Lancashire sailed from England, with four ships, for the Cape of Good Hope, on the second of April; and arrived at Saldanha Bay on the first of August. The Commodore's own ship was in perfect health, owing to the administration of three table-spoonfuls of lemon-juice, every morning, to each of his men; whereas the other ships were so sickly, as to be unmanageable for want of hands; and the Commodore was obliged to send men on board, to take in their sails, and hoist out their boats.

This disease, of course, occurred in ancient times. It was known in the Roman army in Germany, and also in the "Holy Wars," as they were impiously denominated; but it was first particularly noticed in the crew of Vasco di Gama, in 1497. You will find it mentioned by Pliny, as occurring in the Roman army, under the command of Germanicus. But with respect to the remedy, its discovery appears to have been left for modern times; but still not for *recent* times; for you will find it mentioned as far back as 200 years ago. There is a curious fact connected with it, and one which is very instructive, as teaching us not to despise any thing without good reason. It is said that when the London College of Physicians was applied to by Government, for a cure for scurvy, they advised vinegar, which has very little power in the affection; and that a Fellow of the College, who wrote on the disease in 1753, never adverts to lemon-juice at all in his Treatise; and yet that, two hundred years ago, it was mentioned in the "Surgeon's Mate, or Military and Domestic Medicine;"—a work published in 1636, by "John Woodall, Master in Surgery." He ends his praise of it by saying, that he dare not write how good a sauce it was, with meat; lest the chief in the cabin should waste it, to save vinegar. It is said to have been mentioned even still earlier,—in Purchas's "Pilgrim," published in 1600. Dr. Lind, of Haslar Hospital, revived the knowledge of it, more than one hundred years afterwards. He

stated its peculiar powers, in the third edition of his work on the "Diseases of Seamen," in 1772; but even then it was not brought generally into use; and the navy actually suffered most frightfully from scurvy till 1795. Although the remedy was mentioned two hundred years ago, and again in a well-known surgical work in 1636, yet the navy suffered from the want of it till 1795. Earl Spencer, the father of the present Chancellor of the Exchequer,* was then at the head of the Admiralty; and on the representations of Dr. Blair and Sir Gilbert Blane, (who were commissioners of the board of sick and wounded seamen), a good supply of it was ordered by Government. In less than eighteen months afterwards, there was not a case of scurvy in Haslar Hospital. In 1780, there had not been fewer than 1457; in 1806, and in 1807, there was but one.

So great is the effect of this remedy, that you will find the following passage in Sir W. Herschel's work, published in Dr. Lardner's "Cyclopædia," on the cultivation of the physical sciences.† "At present, the scurvy is almost completely eradicated in the navy;—partly, no doubt, from an increased and increasing attention to general cleanliness, comfort, and diet; but mainly from the constant use of a simple and palatable beverage,—the acid of lemon, served out in daily rations. If the gratitude of mankind be allowed on all hands, to be the just meed of the philosophic physician, to whose discernment in seizing, and perseverance in forcing it on public notice, we owe the great safeguard of infantile life;‡ it ought not to be denied to those, whose skill and discrimination have thus strengthened the sinews of our most powerful arm; and obliterated one of the darkest features, in one of the most glorious of all professions."

The scurvy is now prevented, by great attention to cleanliness; by giving sailors food as wholesome as possible; by attention to exercise and cheerfulness; and by a regular supply of lemon-juice. In spite of all this, however, sporadic cases still occur; but, in general, that is all. I have myself had several cases of this disease in London; and some of them were in persons who had never been at sea; and who had eaten no salt meat; but who had been deprived of food nearly altogether. Others were sailors, who came on shore labouring under the disease; for in merchant ships, there is frequently the greatest neglect. I had one patient, a few months ago, who had been sixteen weeks at sea, and had nothing but biscuit and the hardest salt beef, during the whole voyage. There was no medical man on board; but that, I suppose, is unavoidable in small ships. He was, as might be expected, labouring under scurvy to a great extent; and he said that several of the crew had died. I am not sure that the lemon-juice, which I gave these patients as a matter of course, did them any good for they were allowed fresh

* The Chancellor of the Exchequer, at the time these observations were delivered, was Lord Althorp; who has since succeeded to the earldom.

† "Preliminary Discourse on the Study of Natural Philosophy."

‡ Alluding to Dr. Jenner, and the Cow-Pock.

meat and greens every day, with porter, and other articles of good diet; and this was quite sufficient, I am sure, to cure the disease. I gave them lemon-juice in addition; because we have such great authority for its employment. However, some persons now begin to say that the lemon-juice does no good;—that the benefit entirely arises from the other means that are employed; and that the neutral salts, particularly nitre, answer a better purpose. I dare not say, however, that authority respecting the powers of lemon-juice, so accumulated and so immense as it is, is at all to be disputed. I certainly cannot but think that, till we have further facts, it is our duty in every case to supply lemon-juice, (or similar things, if that cannot be obtained), in the hope of doing away with the ill effects, which a want of fresh food occasions. I may also mention that, with regard to local applications, lemon-juice is found to be one of the best. When there is a scorbutic ulcer, I believe a slice of lemon laid upon it, is one of the best applications that can be employed. Père Lebat is said to have mentioned this in his "Voyage to the Antilles."

This is a disease which I should say is of a chemical nature,—if any one be so. In one sense, the constitution is not at all in fault. All the fluids and all the solids appear to be changed; but you have only to give a different chemical state to the body, and the disease is cured. You need give nothing which acts by a specific operation;—no drug, I mean, which acts as a medicine; but employ fresh articles of diet, and you remedy the depraved constitution of the whole mass of solids and fluids. I have, therefore, mentioned this disease, before I came to any of those which are clearly seated in particular parts. I am not aware that it attacks any one part in particular. It seems to be a cachectic state of the whole frame; and if any affection be an instance of universal disease, I should certainly say that it was scurvy.

There is an affection very similar to the scurvy in some respects, which has been arranged and described, by Willan, among cutaneous diseases; and which is called *purpura*. Some are of opinion that this is the same as scurvy; but I cannot think so, for reasons which I will state when speaking of diseases of the skin.

INTERMITTENT FEVER.

Fevers are divided in general into three kinds;—intermittent, remittent, and continued. Some divide them (as you may recollect I mentioned in my introductory observations) into intermittent and continued only; and subdivide the latter into those which continue unremittingly, and which are therefore called *continent;* and into those which have remissions, and are called *remittent*. You may divide them in either of these ways. I shall first speak of *intermittent* fever.

All fevers, whether intermittent or continued, are characterized by those symptoms which I before spoke of, when treating of inflammation, under the name of *pyrexia;*—that particular set of symp-

toms denominated *pyrexia*. In speaking of inflammation, I mentioned that there are only two stages well marked in the pyrexia of that complaint,—cold and heat; but in an attack of real fever there are often three;—a *cold*, a *hot*, and a *sweating* stage. In intermittent fever, these are very distinctly marked. In *continued* fever you may have a shivering at the beginning; but then it will terminate in the course of the disease, and you will have to treat long continued heat. It is only towards the last, that there are any sweats; and frequently, there are none of a remarkable character; for there is often merely moisture of the skin, as the disease declines. But in *intermittent* fever there are usually three distinct stages;—a cold, a hot, and a sweating stage; the first of which is the cold stage.

When this stage is about to commence, the patient feels himself very weak and listless. He begins to yawn, gape, and stretch. He finds his mind less active; and his external senses are more or less dull. Sometimes there is even real stupor, but in all cases the patient's mind is very dull. He is unable to go on with what he is about; and even his external senses are impaired. There is also, at the same time, a great depression of spirits. Very soon a sensation of coldness is felt,—first of all in the back; and the patient will complain of chilliness, before others who touch him can perceive it. As soon as the cold stage has begun, the surface becomes pale and dry; and the mouth and fauces also become dry. Then the patient begins to tremble slightly. He becomes really cold;—the temperature falls perceptibly to others. He trembles more and more, and becomes colder, till he is in a state of downright shivering, and then his jaws chatter. The constriction of the skin at this time is so great, that it becomes rough; and, in common language, is called "*goose's skin;*" but in Latin, *cutis anserina*. Such is the shrinking, that rings will fall off that previously fitted very well. There is a sense of *creeping* and *shuddering* over the skin; the hairs of which stand on end; and this state is called *horripilatio*. The urine which is made at this time is pale and scanty. Probably the same constriction of the secreting vessels of the kidney takes place, which occasions the dryness of the surface of the body. It is the same constriction, I presume, of the secreting vessels, that gives rise to the dryness of the mouth and fauces, and also to the thirst. This is altogether a state of debility; and consequently the pulse is weak, and sometimes slow; and the breath is generally short, from the accumulation of blood, I presume, in the internal parts. Sometimes the stomach is affected with vomiting. In a very intense cold stage, the face, hands, and feet, become blue; the fingers shrivelled, and the eyes sunk.

Here you see that the blood has receded from the surface, and probably from all the small vessels; so that it has accumulated, in great quantity, in the large vessels of the interior. After this state has existed a certain period, of very various duration, the skin relaxes. It regains its warmth, colour, and sensibility; and the pulse becomes quick and fuller. The heat, the colour, and the sensibility

of the skin, go on increasing; till at length they exceed their natural standard, and the pulse grows full and very rapid. Such is the excitement now, that not unfrequently the patient complains of headache; and even delirium occurs. The thirst, the dryness of the skin, and the deficiency of the urine continue;—probably because the extremities of the secreting vessels are still in a state of constriction; though the small vessels have become filled with blood. The urine, however, changes its character. From being pale and watery, it becomes high-coloured; but it is still clear. The breath becomes fuller;—most probably from the blood getting into the small vessels; and the patient can take a deep inspiration. There is not that slow breathing, which there was at first; but still there is more or less oppression; for the heart is in violent action; and when that is the case, there is always a degree of dyspnœa. That state now takes place which is vulgarly called *fever*. If the disease intermit altogether, it is called *ague;* from the French word "*aigue*,"—sharp,—acute. But the common people limit the word "*fever*" to the hot, or hot and sweating stages; and denominate only the cold stage "*ague;*" so that it is common to hear one of the lower orders tell you, that he has got the ague and fever; but *ague*, properly speaking, includes the whole of the three stages. You may recollect the following passage in Macbeth:—

—— "The obscure bird
Clamour'd the livelong night: some say the earth
Was *feverous* and did *shake*."

From this it appears that the word "*fever*" was applied, in those days, to the *cold* stage, as well as to the *hot*. There can be no doubt, that both the expressions "*pyrexia*" and "*fever*," though made by medical writers to include the whole stages, imply properly the hot only; as the former is derived from πῦρ,—fire; and the latter from *ferveo*,—to be hot.

After the hot stage, the skin at length becomes still softer. It also grows moist; and the moisture augments, till at last the person is in a profuse sweat. The same relaxation of the internal secreting vessels takes place in consequence of which the thirst declines; the urine becomes copious; and the vessels let through so much substance, that it forms a lateritious sediment. After the sweating has continued an indefinite time, the pulse gradually grows slower; and the sweating and all the other symptoms diminish. The appetite, which is generally absent in all the three stages, now returns; and the patient is as well as though nothing had happened. If the disease last very long, the patient becomes shattered by it; but in general, if the disease be not very severe, if there be no local affection, and if the patient have not laboured under it long, when the paroxysm is over, he is much about the same as he was before.

There is great variety in the intensity of every one of the symptoms which I have mentioned. There is great variety in the relative intensity of the different stages; and great variety in the intensity of

the whole disease together. This, however, is not all. There are occasionally *incidental* symptoms; such as tetanus, convulsions, fainting, violent delirium, and the appearance of petechiæ on the skin. Some persons, while in the paroxysm, have been known to have their muscles rigid;—absolutely in a tetanic state. Others have been violently convulsed; fainting has occurred; and delirium, in the hot stage, is very common. Sir John Pringle mentions violent delirium, as the character of an epidemic intermittent which he saw prevail. He also mentions that, at Copenhagen, in 1652, petechiæ appeared in the hot stage of an intermittent which prevailed there. Bartholini gives an account of an epidemic, in which petechiæ appeared in the hot stage;—always disappearing afterwards. I have not seen the whole of these symptoms. Delirium, in the hot stage, is common enough; and in two cases I saw, in the cold stage, violent clenching of the hands; so that the fingers and thumbs were drawn together in the most violent manner; and continued so until the cold stage was over.

These stages may all take place in the course of one day, and never return; and then the disease has been called *ephemera;*—a disease of a day's duration. But, for the most part, these stages return periodically. They return, in general, not only regularly, but *periodically;* so that you do not have ephemeral ague, but intermittent fever. The intermission between two paroxysms, is usually part of one day, at least; or it may be a whole day, or two days. By "*day*," in medicine, we mean day and night;—the twenty-four hours. Beyond two days, the intermission is rarely regular. If the intermission be only part of a day, the fever is called *quotidian;*—that is to say, if the attack returns every day (there being an intermission of only *part* of a day) it is called *quotidian.* If there be an intermission of a *whole* day, so that the patient has an attack every *other* day, it is called *tertian.* It assumes this name, because the first day is counted as well as the third. The day on which a person is attacked, is the first; the day of intermission, the second; and the day of the second attack, the third. It is, therefore, called *tertian.* If the intermission extend two days, so that the patient shall have a fit on Monday, none on Tuesday, none on Wednesday, but one again on Thursday, then it is called *quartan.* The day of the paroxysm constitutes the first; then follow the two days of intermission,—making three days; and then, on the fourth, you have another paroxysm. These are the most common forms of the types of intermittent fever; and, in London, the quotidian and tertian are far more frequently seen than the quartan.

But the intermission may be still longer; so that you may have, not a quartan, but a quintan, a sextan, a septiman, or even a deciman. In the last there is an interval of nine days; and the first day, being counted, makes up the ten. I heard a gentleman observe, that he saw a septiman take place for three weeks; that is to say, the person had a paroxysm after an interval of six days, occurring on the seventh day, regularly for three weeks. In 1827, I myself had a

patient in St. Thomas's Hospital, with a septiman. He regularly had his disease, after an interval of six days. During the same year I had another patient, who had an interval always of four days; so that his disease was a quintan. I once treated a double octavan. A man had a paroxysm every Sunday and Thursday;—the Sunday paroxysm being at one hour; and the Thursday paroxysm always at another. When they extend to these periods,—when they are more than a quartan,—when the intermission is longer than two days, the disease is called *erratica*;—it wanders out of the usual regular course. The epithet "erratica" is also given to an ague, which observes no regular period; which at one time is quartan; at the next quintan; &c. You will find the term "*erratic*" employed by authors in both these senses.

These are, for the most part, all the varieties which it is necessary to recollect; but, as a matter of curiosity, I may mention that the disease has sometimes other types. Sometimes you have more than one paroxysm in a day;—more than a quotidian; and I heard a gentleman say, that he saw a case in which there were four paroxysms daily. I never did. But it is very common indeed, to see what is called a *double tertian;* in which you have a paroxysm every day; but in which you see paroxysms two days in succession, which do not belong to each other. For example,—suppose a patient has an attack every day in the week; but the paroxysm on Monday is at eight o'clock in the morning, and the paroxysm on Tuesday at four in the afternoon; while the paroxysm on Wednesday is at eight o'clock in the morning,—like the paroxysm on Monday; so that the paroxysms of Monday and Wednesday agree; whereas the paroxysm on Thursday is at four o'clock in the afternoon;—the same hour as the Tuesday paroxysm. Now this appears a *quotidian*, because it occurs every day; but it is, in reality, a *double tertian;* for it is as if the patient had a tertian which came on every Monday and Wednesday; and another which came on every Tuesday and Thursday; and inasmuch as the paroxysms which occur every other day agree, it is called not a *quotidian*, but a *double tertian;* and in Latin, *tertiana duplex*. But it will sometimes happen that there are two fits on the day of attack, and none on the following day. Supposing the disease comes on every other day, (as, for instance, Monday and Wednesday), but that you have, on each of those days, two attacks; it is then called a *duplicate tertian;—tertiana duplicata*. That is the difference between *tertiana duplex*, and *tertiana duplicata*. I do not know whether you will be questioned on this matter; but it certainly is a singular fact in the history of the disease, that such occurrences take place.

Respecting the double tertian,—the one which comes on every Monday and Wednesday, for instance, and every Tuesday and Thursday, but at different hours,—you will sometimes find scarcely any intermission between the Monday's and the Tuesday's paroxysm; while the intermission between the Tuesday and Wednesday paroxysm is distinct enough; or, *vice versâ*, that the one is

hardly over when the other begins; and it is then called *semi-tertian*, *half-tertian*, or (if you prefer Greek) ἡμιτριταια. The paroxysms are brought so near, that it is almost remittent fever; and it is scarcely worth while to call it any thing else than remittent. It has, however, as I have just stated, received the name of "semi-tertian;" and though the interval between the attacks on the first and second day is so short, yet the intermission between the second and third is much greater. You may, however, not only have a *double* tertian;—one on Monday and one on Wednesday at a certain hour; and again on Tuesday and Thursday at another hour; but you may have on Monday two fits, and on Wednesday two fits; and then this is called a *triple* tertian.

You may also have a *quartana duplex* (*double* quartan);—there being an additional paroxysm on the first day of the intermission, at its own hour; and a *quartana duplicata* (*duplicate* quartan);—two paroxysms on the day of attack; and also a *tripled* quartan;—three paroxysms on the day of attack. These things are so minute, however, that you may not be able to follow them in a lecture; and immediately after you have learned them, you will perhaps forget them again; and it is better, therefore, to refer to them in books. The observations I have made, are sufficient for all practical purposes; and I only wish you to be aware, that these extraordinary deviations do sometimes take place.

A paroxysm of intermittent fever, including the three stages, is generally finished in eighteen hours. It is a rare occurrence for it to last longer than that period. Dr. Good, however, quotes an author, who stated that he saw a paroxysm which lasted exactly *one minute*. How the stages were divided I do not know. What was the severity of the cold stage, it is impossible to conceive; but I should think, that when each of these stages was over, the man might have doubted whether he had been ill or not. But authors may be quoted for any thing.

The paroxysm of ague is said, like almost all fevers indeed, more frequently to begin in the day than in the night. As a general rule it may be stated, that the paroxysms commence between eight o'clock in the morning, and the same hour in the evening. Of course there are ten thousand exceptions; but, in the majority of cases, the paroxysm begins in the day. You will find it mentioned in authors, that a quotidian usually has its paroxysms in the morning, a tertian at noon, and a quartan in the afternoon. I believe there is some truth in the observation, that a quartan generally begins late in the day; but you will very frequently see tertians come on in the afternoon, quartans come on at noon, and quotidians in the evening. It is said likewise, that a quotidian has the shortest *cold stage*, but the longest *paroxysm* altogether; that a tertian has a longer cold stage, but altogether a shorter paroxysm; whereas a quartan has a still longer *cold stage*, but nevertheless a shorter *paroxysm* than either of the others. But for these particulars there is no universal rule.

You will find, in authors, some very curious cases of paroxysms

affecting only a part of the body. There are a number of cases on record, by authors entitled to credit. There is one case mentioned, in which a vertical half of the body suffered an attack of ague; and during the cold fit, the other half became convulsed. What is still more singular, the same half was not always similarly affected, but the symptoms changed sides. You will likewise find a case mentioned, where the paroxysms of ague affected one half of the body horizontally. In some cases it has only affected half the head; and Dr. Macculloch says that a paroxysm may affect one limb only. Now these facts are not at all insulated. They are perfectly analogous to many others which are occasionally observed in the human body. Epilepsy will sometimes affect only one half of the body; nay, sometimes it will affect only one limb. Catalepsy will do the same; and paralysis does this so continually, that one of the established forms of palsy, is hemiplegia; and another is paraplegia. Dr. Abercrombie, in his work on the Pathology of the Brain,* says that a friend of his, when in exercise, only sweats in a vertical half of the body;—that there is a line upon the forehead, perfectly distinguishing the sweating from the dry side; but that if he take very violent exercise indeed, then the dry side is at last forced to perspire a little, like the other. You will find in the work of Andral,† (another modern writer), instances in which sweating took place in one half of the body only. In some of these cases it was a vertical, and in others a horizontal half. You will find a case mentioned by Dr. Falconer, in which a child became pale and emaciated in one half of the body only.

Intermittent fevers, during their progress, frequently change their type. From tertian they will frequently become quotidian; from quotidian they will become tertian; and from either of these, they will become quartan; while from quartan again, they will become either of the former. Sometimes they will change their type once; sometimes they will change it more than once; and sometimes they will continue changing, so that they observe no rule at all; and then, as I have already said, they are called *erratic.* Another variety is, that they will not change their types;—they will still remain quotidian, tertian, or quartan; but they will change the hour of their attack. Instead of beginning at the same hour, they will begin later and later, or the reverse; and sometimes they will begin with such irregularity, that a patient never knows when to expect them. Sometimes they will be very irregular at first, and then at last they will grow regular;—seeming only to make up their mind, after a time, how they shall go on. At other times, they will grow milder only. It is a general rule that the paroxysm grows later and later as they grow milder. As the paroxysms become more severe, more intense,

* "Pathological and Practical Researches on Diseases of the Brain and the Spinal Cord; by John Abercrombie, M.D."

† "Clinique Medicale, ou Choix d'Observations recuellies a l'Hopital de la Charité; par G. Andral." This work, which is a vast repository of valuable pathological facts, has recently been translated by Dr. Spillan.

and the disease gets worse, they generally come on earlier and earlier; but when the paroxysm grows later and later, and at the same time milder and milder, it at last degenerates into nothing more than a little chilliness, a little heat, a little sweating, or a little of all combined. It is very common, at last, for the paroxysm to show itself only a little at a certain time of the day; or for there to be only a little sweating, or only a little chilliness. These diseases occur chiefly in spring and autumn. You will therefore continually read in authors of *vernal* and *autumnal* ague. The quartans usually take place in autumn;—that is to say, there are more quartans among autumnal, than among vernal agues.

Although agues have generally these three stages, you will sometimes see the paroxysms imperfect, even before the disease has much declined. I have often seen and cured an ague, in which the cold stage took place, but was never succeeded either by the hot or sweating stage. So sometimes the hot stage will come on alone, being preceded by the cold stage. A paroxysm is generally terminated by the sweating stage; but sometimes there will be no sweating at all. You may have either of the three stages alone. This is worthy of remark; and it is an undoubted fact; for I have witnessed it, over and over again. Cullen says that the cold stage is necessary to the others. He considers that the cold stage excites the *vis medicatrix naturæ;*—that, to get rid of the cold stage, nature bestirs herself, and brings on the hot, and then the sweating stage. But this is a fallacy; for I know you may have the hot stage, without any cold preceding it; and that you may have the cold stage, without any subsequent hot stage. Sometimes there is no regular paroxysm at all; but patients with ague will have, at various periods, a general chilliness, with great depression of spirits; so that they will cry, yawn, stretch, and often be even a little silly, and have a number of odd feelings. Now this state of things is well known by the lower orders; and is called by them, very significantly, the *dumb* or *dead ague;*—an ague which is not at all lively, or does not speak or shew itself it an open and manly manner. It is, however, to be treated exactly like all other forms of the complaint.

I have mentioned, respecting the variety in the paroxysms, that sometimes there will be one stage alone without the others; but one author tells us that he saw all the stages reversed;—that the disease began with sweating; then the hot stage came on; and the paroxysm was closed by the cold stage. Before this disease is fully formed, the attack is sometimes preceded by headache, by pains in the nerves (neuralgia), by vomiting, by general indisposition; and all this may last for a longer or shorter time. These symptoms may cease on the appearance of the disease; or they may continue, more or less, when the affection is established. Even continued fever has preceded ague.

The duration of ague is various. It may be ephemeral, consisting of one paroxysm; or it may last for many years;—at least, it did so before we could cure it so effectually as we can now. One case is

said to have lasted eight-and-forty years. Lommius, on the Continent, who wrote in beautiful Latin, mentions a case which lasted twenty years. One unfortunate fellow (Valescus of Tarenta) is said to have had it all his life. Dr. Gregory said that he saw one case which had lasted four years. On the other hand, Dr. Mason Good quotes Senac for a case, in which disease destroyed life the moment it began. When it proves fatal, Sydenham says it is in the cold stage; because, when the hot stage comes on, nature is getting the better of the disease; and that a patient cannot die from it if nature be recovering, as is the case in the hot stage. But the truth is, that it *will* kill in the hot stage. In hotter climates than our own, there is great congestion of the internal parts of the head; and persons will fall into a state of coma, as they sometimes do here in the first stage. I have known some people have it every spring for many years. Although we have never seen people that have it regularly all the year round, yet most of us have seen individuals who have the disease regularly once a-year. Respecting its duration, however, quartans are said to last the longest. Tertians and quotidians are more like an acute disease; but the quartan, coming on after an intermission of two days, partakes more of the nature of a chronic affection; and being chronic in its *character*, so really it is chronic in its *duration*. Certainly it is the quartan that, in general, lasts longer than the others; and it is generally more difficult to cure. On the same principle, again, it is said that a tertian, left to itself, lasts longer than a quotidian.

Ague affects all ages. It is seen in young children even at the breast; and I have under my care for this affection, an old man, about eighty years of age. However, it is said to affect children earlier than when at the breast;—to affect them before they are born. You will find cases mentioned, not only in which the children had a paroxysm of ague, the very moment that they came into the world, (just as it is said that some children have had hooping-cough; so that the first thing they did was to hoop instead of cry), but in which a child had the disease before it was born. In Dr. Russell's "History of Aleppo," there is an account of a woman who had a tertian ague. This woman was with child, and she shook every other day; but the child within her she felt shaking regularly on the day when she was disposed to be quiet. She shook, for example, on the Monday and Wednesday; but the little one shook on the Tuesday and Thursday; so that *she* had one tertian, and the child another. If it had not been for this diversity, she could not have ascertained that the fœtus had an ague, nor could the doctors. What farther proves that the child had a different ague from the mother, is that Peruvian bark was given to the latter, and that it cured both her and the child; but as the child was young,—younger than its mother, I suppose the bark had more effect upon it; for it was cured one paroxysm before the mother. A gentleman informed me that he saw a similar case at a dispensary in London. The woman came shaking with ague; and the child within her shook like herself, only

at a different time. I suppose there is no doubt of the truth of the case related by Dr. Russell. There is no question about children having had the small-pox in the womb. Mr. Abernethy used to mention the case of a child that had the *disease*, though not the peculiar *symptom* of hooping-cough, before it was born. It was affected by the contagion; though, for want of breath, it could not hoop before birth; but it embraced the very first opportunity it had of doing so.

When this disease has once occurred, it is very liable to return, from common causes. Cold, wet, and, in this country, the east wind particularly, have a tendency to bring it back. Whether it will recur spontaneously, I do not know. Whether, without cold and moisture, and without an east wind, or some wind charged with malaria, it will return, I cannot say; but certainly, when a person has once laboured under it, frequently the slightest cause will bring it back. Dr. Gregory used to mention that he had seen two persons, in whom ague returned, from some common cause, after having been absent forty-seven years. Dr. Gregory also stated that it had been known to recur, after a lapse of years, at the very day and hour on which it originally began.

The existence of this disease gives an intermittent, or remittent tendency, to many other affections that may be present. Suppose a person has a disease, and that he is then attacked by ague;—the first disease will have a tendency to blend with the ague; so that he will have remissions, if not *intermissions* of it. When ague prevails epidemically, persons who are exempt from it still shew a tendency to an intermittent or remittent character, of any other disease which they may have at that period. This, however, is chiefly seen in fever. When ague prevails, or persons are exposed to the cause of ague, continued fever has a tendency to put on the remittent form; and remittent fever appears to be a combination of continued and intermittent fever. Ague is very frequently followed by rheumatism. I am not acquainted with a more frequent occurrence, than that of ague being followed by severe rheumatic pains in the extremities, or in the head. Occasionally it will alternate with rheumatism; so that the rheumatism shall cease, and the ague return, and *vice versâ*. Dr. Gregory used to mention, that he saw ague alternate with epistaxis; and in another case he saw it alternate with hæmaturia;—bleeding from the urinary passages; which bleeding, however, ceased at last; and then the ague returned, and was followed by paralysis. He used also to mention, that he saw two cases of ague continue four years; at the end of which they were cured by bark; but periodical delirium came on in its stead.

Ague is very often attended by local inflammation; sometimes by inflammatory pains of the head; sometimes by inflammatory affections of the chest, and likewise of the abdomen; particularly gastritis and hepatitis. In autumn, and in hot climates, it is the abdominal viscera that suffer the most severely; and ague is likewise very frequently

attended (when not by inflammation of these parts) with bilious vomiting, and bilious purging; and even by jaundice and dysentery. In some places (Zealand, for instance) Sir John Pringle mentions that ague is called *gall-fever*. It is on account of the great irritation of the liver that takes place, and the abundant secretion of bile, that aguish diseases are thus called.

After death during intermittent fever, we often find congestion and effusion in the head, chest, or abdomen. The mucous surface of the alimentary canal, is likewise in a state of great congestion; and the liver contains a large quantity of bile. When this disease proves fatal, it frequently does so by great internal congestion; whence you find fulness of all the blood-vessels of the head, chest, stomach, and intestines; and a large quantity of bile in the liver. When the disease has continued for a considerable time, you have various organic affections;—such as dropsies, and other things which I shall hereafter mention. But when a patient dies in a paroxysm, or dies after the disease has existed only for a short time, you find decided marks of internal congestion.

The chronic form of the disease, is very frequently attended by other affections; and frequently after ague has ceased, other diseases make their appearance. It is very common, for example, when ague has continued any time, for the spleen to become enlarged. So common is this, in some places, that the tumor is called by the vulgar *ague-cake*. The tumor thus formed by the spleen, occupies the left hypochondrium; or perhaps the whole left half of the abdomen. Dr. Cleghorn, who wrote a very excellent work on the diseases of Minorca,—a work well worthy of perusal when you have time,—mentions having seen a spleen, after ague, which weighed eighty ounces. Dr. Gregory used to speak of one that weighed twelve pounds. You will frequently see this enlargement of the spleen in the case of infants. I have seen many with enormously large spleens, in infants who had been the subjects of ague.

When this affection has existed for any length of time, it is common also to see ascites, as well as enlargement of the spleen. You will frequently, likewise, see enlargement of the liver and jaundice. Enlargement, both of the spleen and the liver, is common; but particularly of the former. In the case of the spleen, the patient is for the most part pale;—he falls into a state of anæmia,—bloodlessness; while, in the case of the liver, he becomes more or less jaundiced. Very frequently you will have anasarca, as well as ascites; and not unfrequently, without any ascites, you will have anasarca; and these affections generally remain, for a longer or shorter time, after the ague has ceased. They will occasionally come on while the ague exists; and occasionally not till it has ceased; and, in the former case, they are all the worse for the continuance of the ague. It was formerly imagined, that these affections arose from the ague being stopped; but this I am convinced is a mistake. Persons will have them, who still have ague very violently; and these complaints are

the worse for the ague. Patients will bear them much better if you cure the ague. The ague shatters the constitution; and renders it a more easy prey to any visceral disease that may exist. I do not believe these affections are the effect of ague. On the contrary, I am satisfied they are the result of the same cause which produces ague, and of which I shall presently speak; for I have seen people labour under enlargement of the liver, enlargement of the spleen, and dropsy of great intensity, who had but one fit of ague; and a fit which bore no proportion to the severity of these other complaints. It appears to me, that the same cause which produces the ague,—a poisonous exhalation,—produces likewise these various effects; and, indeed, they render the ague more obstinate. It is sometimes almost impossible, or quite so, to cure an ague while these affections exist; but if you remedy them in the best way you can,—by mercury, bleeding, purging, and the usual remedies of chronic inflammation,—you will frequently cure the ague without any trouble. If they arose from the ague being *suppressed*, you would not have them while the ague *continued*; and if they depended on the *ague*, and not on the *cause* of the ague, they ought to bear some proportion to its degree and continuance; but they appear to bear a proportion, in some measure, to the continuance and intensity of the *cause* of the ague. Still the continuance of ague, by debilitating the system, does make them worse.

Another circumstance, mentioned by some authors as an effect of ague, (or perhaps I should say, of the *cause* of ague), is idiocy. The faculties of the mind frequently become impaired, by a long exposure to the cause of ague. Sydenham mentions a degree of idiocy, or at least of impairment of the mental faculties, which he calls *amentia quartana*,—quartan fatuity. There can be no doubt that the continuance of ague *increases* such affections, by debilitating the constitution; but I do not believe that ague *gives rise* to them; but that they proceed from the same cause which produces ague.

Vernal, or spring intermittents, (those which make their attack between the winter and the summer solstice), are chiefly attended by affections of the chest;—that being the period at which affections of the chest are most prevalent. The autumnal intermittents (those which take place between summer and the winter) are particularly attended by abdominal symptoms;—by inflammation, for instance; and sometimes by intense bilious vomiting, purging, and jaundice. At this time of the year, too, ague has a great tendency to become continued fever;—that is to say, the excitement is disposed, not to *cease*, but only to *remit*. When the autumnal intermittents prevail, you have as many remittent fevers as agues; and some of these become continued. This conjunction most probably arises from the fact, that the causes of these various local excitements, and also of continued fever, co-exist with the cause of ague. Without any ague at all, we are all disposed to affections of the bowels, and of the stomach and liver, in hot seasons of the year; and if, therefore, the causes of ague are joined with the causes of these common affections, you will

of course have ague accompanied by these other diseases. Still it is possible that the cause of ague may be modified; so as to produce peculiar effects at this season.

Sometimes ague, so far from being accompanied by other diseases, actually puts a stop to diseases which had previously existed. Dr. Gregory used to mention, that he saw palpitation cured by ague; that the man lived afterwards for many years; and died free from the palpitation, under which he had suffered till the ague seized him. Dr. Fordyce mentions, that he has seen ague cure many diseases. In fact, ague has been thought so capital a thing, that some writers contend it never should be cured; and a proverb once prevailed that,—

"An ague in spring,
Is fit for a king;"—

not, however, for a *subject*, I think. You will find that Boerhaave says, in his Aphorisms, that it disposes to longevity, and clears the body from inveterate diseases. His words are,—"Cæterum (febres intermittentes) nisi malignæ, corpus ad longævitatem disponunt; et depurant ab inveteratis malis."

There is no doubt, however, that agues shatter the constitution. They shorten life; they may be speedily fatal; and if any other disease exist at the time, they for the most part aggravate it. Dr. Macculloch believes, that when they appear beneficial, it is generally not by curing other diseases, but merely by their assuming a regular type. Ague, as I mentioned before, is sometimes obscure,—does not declare itself fully; and is then called *dumb* or *dead* ague; and in these circumstances, you sometimes have extraordinary symptoms, which will disappear if the ague come on in a regular, straightforward style. It is therefore mentioned by Dr. Macculloch, and appears very plausible, that when benefit appears to arise from ague, it is from the disease having existed previously, but in so strange a manner, as to produce all sorts of symptoms; and from its having all at once become regular. It cannot be one thing and another thing at the same time; but when it becomes regular, then, for the first time, a person thinks he has got an ague, and has lost some other disease.

The continuance of ague usually causes emaciation of the body, unless it produce hepatic, or splenic disease, and dropsy; and then the body will look bloated; but still it is pale, and evidently greatly diseased. It is even said that (in some parts of Flanders, especially) ague has a tendency to produce obesity; and sometimes very rapidly; but I imagine that the fat cannot be what people call *good* fat. There is a sort of bloated blubbery fatness; and when it is remarked that such a person has got fat, people will shake their head, and say it is not *good* fat. This, I think, must be the case in Flanders; and it is said that this obesity will occur there, whether the disease has been acute or is chronic; and when there is no suspicion whatever of organic disease. It is said, too, that if the disease return there, or if

the seasons be very unhealthy, and a patient becomes emaciated, the obesity returns when all this is over. Many fat Dutchmen live in places where malaria prevails; but still they do not look healthy. The ill effects of the disease are so manifest, that no one who has an ague, ought to be much displeased with the doctor for curing him of it. Oliver Cromwell, and James the First, are said to have died of ague, caught in London. Dr. Caius says, that so fatal was ague in London, in the year 1558, that the living could hardly bury the dead. Bishop Burnett says, in his "History of the Reformation," that so universal was it in London, and so contagious, (though that was a mistake) that it raged like the plague. Sydenham and Morton both tell us it was the most fatal disease in London, from 1661 to 1665. In our *untoward** expedition to Walcheren, in no more than five weeks,—that is to say, during the last week of September, and the whole of October,—our effective force was reduced by ague, or by remittent fever,—aguish disease, to one-third; and ten thousand men died of what was called *Walcheren fever;* which was neither more nor less than an *aguish* fever.

If it should so happen that a much worse disease than ague is arrested by its occurrence, we might allow the latter to go on; but I never saw such a case; and even then I should be inclined to stop the ague gradually; and to use, at the same time, the remedies calculated to remove the other disease. For example, ague, I suppose, is preferable to phthisis; and if a patient were actually in a state of consumption, and the consumptive symptoms ceased on the occurrence of ague, one might be disposed only to *mitigate* the ague, but not altogether to *cure* it. However, I never met with any of these cases. A very eminent man, Dr. Wells, (one of my predecessors in St. Thomas's Hospital), fancied he had good ground for suspecting, that phthisis and ague were opposite; so that where ague prevailed, there was no phthisis; and *vice versâ*. It really appears that there is something in this;—that ague does lessen the tendency to phthisis; but still the matter is not so important as Dr. Wells imagined. The opposition of one disease to the other, is nothing like what he fancied it to be. You will see the question argued by Dr. Southey, in a book on Consumption†; in which he has taken great pains to collect documents from aguish parts; and proves that there is phthisis enough in those parts. I have seen several persons die of phthisis, while they had more or less ague. Some have carried Dr. Well's opinions so far, as to send a patient, who was half-dead with phthisis, to stand in a ditch at night, in order to catch an ague.

With respect to the effects of ague, you will find one shewn in the

* Future readers may not understand the political allusion here. It refers to the first "king's speech" delivered to the British Parliament, after the victory at Navarino; in which speech the destruction of the Turkish fleet is called an "*untoward* event."

† "Observations on Pulmonary Consumption; by Henry Herbert Southey, M.D."

countenance. The face in ague, and long after, is often very peculiar. It is of a dirty straw colour; and is so well characterized, that it has been called *aguish face.* The face is not yellow, nor of the colour of *clean* straw; but presents a sort of *dirty* straw-coloured look. Without the occurrence of ague, the mere residence in an aguish place gives the same hue; so that it is the effect of the *cause* of ague.

I shall now speak of the *causes* of ague; and among the predisposing, must be first mentioned bad health. If a person be out of health in any respect, he is more likely to be affected by the causes of ague; just as is the case with respect to all other diseases. A general weakness of body, independently of the presence of any particular disease, must have the same effect. High health, in general, is certainly one of the best safeguards against it. The father of the late Dr. Gregory, who was one of my preceptors,—the physician, who wrote two very excellent works, (distinguished by refined ideas, and a high tone of moral sentiment), entitled, "A Father's Legacy to his Daughters," and "The Duties of a Physician,"—used to mention that when he was a student at Leyden,—for then, if persons wished to get a good medical education, they were obliged to go to the Continent,—there were twenty-four students who always dined together, and were very much in each other's society. Twenty-three of them regularly, every day, drank a bottle of claret each; but one confined himself to water. The twenty-three escaped; while the poor water-drinker caught an intense ague. This strikingly exemplifies the advantage of keeping up the vigour of the body, when persons live in an unhealthy situation. It was *claret* which they drank,—not *port;* but that was quite sufficient to keep up a degree of excitement of body, and strength of mind, which enabled them to resist the disease. Depression of spirits will have just the same effect, as too low living. Any thing which lowers the body at large, will have the same effect; whether it be over-exertion of the body, or of the brain or mind (whichever you choose to say); or the want of good food and cloathing, or of pleasurable excitement of mind; or the presence of any thing which can depress the spirits. It is said that the effects of the mind were seen at Walcheren; and probably they were, from this circumstance. When the men arrived there, all full of the hope of military glory, they for some weeks continued healthy; but at last, when they saw that there was nothing to be done,—that the expedition would fail, they soon became the victims of disease. It is to be considered, however, that latterly they had much greater fatigue to go through; and the longer they remained there, the more they were exposed to the morbid cause of ague; but still, when they lost all mental excitement, by the failure of the hope of what is stupidly called "military glory," they nearly all fell victims to the disease.

The good effects of wine, in keeping up the strength against this disease, are shewn in the fact, that people find it indispensable in the marshy parts of France. They cannot resist ague there, unless they drink wine. Sir John Pringle mentions, that wine and full diet

are the best safeguards against it. The Dutch are in the habit of exciting themselves, by taking spirits, before they go out in the morning; and it is highly necessary,—exposed as they are to the exhalations of their putrid ditches.

Though all ages appear liable to the disease, infancy and extreme age are less liable to it, than the middle period of life. Certainly the greater number of persons whom I see labouring under ague, are neither infants, nor those much advanced in years. It is to be remembered, however, that persons in the extremes of age, are much less exposed to the *cause* of ague than others. Women, too, less frequently have ague than men; but I should think this arises, not from the female constitution being less liable to it, but because (from spending a greater portion of time at home) females are less exposed than men to its cause. Sir Gilbert Blane states that, during the ten years he was physician to St. Thomas's Hospital, he had one hundred and ninety-two cases of ague; only thirty-three of which were in females.* I made an estimate of my cases of ague at St. Thomas's, during a period of five years; and found that I had one hundred and forty-two cases, of which only twenty-three occurred in women.

It would appear that persons who have not been exposed to the cause of ague, are more liable to suffer, when by chance they are exposed; for those who had formerly lived among agues, if exposed at any subsequent period, will often escape, while the others suffer. Hence it is said that some farmers, in aguish parts, have made fortunes by marrying a succession of wives from healthy districts. Coming fresh upon an aguish part, they have been taken hold of by the malaria; and a good, *kind* husband has been enabled to look out for a second, and a third, to *love*. However, although persons may become habituated to it, (as they may to any thing else), yet it more or less injures the constitution; so that those who live in aguish parts, unless they are well fed and in good spirits, suffer more or less. They seem to be gradually poisoned by the causes of ague; although these may have not been sufficient to excite ague itself.

The *exciting* cause of ague,—the true indispensable cause of it, I believe to be an exhalation from decaying vegetable matter; what is sometimes called *phyto-septic matter*, *vegeto-putrescent matter*, *miasm*, *marsh-miasmata*, or *malaria*. However, "marsh-miasma" is an improper expression; for though it will come from a marsh, you may have it without the existence of any marsh at all. It is said that the causes of ague were not known to Sydenham, or to Stahl; and that they were first assigned by an Italian author (Lancisi), in 1717. It is said that neither Boerhaave, who wrote in 1747, nor Baron van Swieten, who wrote a few years afterwards, were aware of the cause of ague. Dr. Cullen, however, from extensive reading, satisfied himself that there was but one real cause of ague; and that it was the exhalation which I have now mentioned. The ancients

* See his paper on "Intermittent Fevers," in the third volume of the "Medico-Chirurgical Transactions."

were quite aware that marshy districts were exceedingly unhealthy. The least acquaintance with the classics, will furnish you with lines enough to prove this.

The reasons for ascribing aguish remittent, or intermittent fevers, to these exhalations from vegetable matter in a state of decomposition, is that the disease prevails in the neighbourhood of marshes; that it declines in proportion as marshes are drained; and that it rarely appears in any one, who has not been evidently exposed to the exhalations of decomposing vegetable matter.* Every one has heard of the ague of the low countries,—of Flanders; every one has heard of the aguish fevers of the banks of the Ganges; every one has heard of the ague of the fens of Lincolnshire, the hundreds of Essex, and the lower parts of Kent. I mentioned that the disease is not by any means confined to marshes. It springs up around marshes, where persons are exposed to their exhalations; but every spot which contains decomposing vegetable matter, may excite the disease. On this account, I should prefer the term *malaria* (which, indeed, is now generally used) to that of *marsh-miasmata*.

It is not mere moisture which produces the disease; for there is no ague, however wet the weather may be, till swampy land is approached, or exhalations arise from a swampy part. No drenching by rain, will produce it; unless a person has had ague before, or has been exposed to malaria. But when a person has once had ague, taking cold (whether there be moisture or not) may re-excite it; or may render the system susceptible of the effects of malaria, which it had resisted before. In the thick fogs on the banks of Newfoundland, people never experience ague. The waters there come from the gulf of Mexico; and are called the gulf-stream. They are from six to ten degrees higher in temperature, than Newfoundland; in consequence of which the vapour which passes from the water, is immediately condensed. There is, therefore, a constant fog; so that the fishermen who reside on the great bank, are six months employed in fogs so great, that they can hardly see from one end of the ship to the other. But though they are thus constantly enveloped in moisture, they are never known to have the ague. There is more rain in the western, than in the eastern parts of England; and yet the inhabitants are not proportionately unhealthy. On the contrary, it is on the eastern side that ague particularly prevails; as I shall mention hereafter. So much with respect to mere moisture.

With regard to exhalations, I may mention that Minorca, though it has a rocky bottom, and no marshes, is nevertheless subject to ague; because, in different parts of the island, there are pools of stagnant water. Much vegetable decomposition takes place in the stagnant pools; and the island is in the same predicament as though it were marshy land. The soil of the Campagna of Rome, in the most fatal season, is dry; but then the Campagna is intersected with

* Dr. Fletcher attributes marsh-miasmata to exhalations, not from *decomposed*, but from *diseased*, vegetables. See the "London Medical and Surgical Journal," for June 3, 1837.

ditches and drains of water, quite sufficiently impregnated with vegetable matter to explain the aguish fevers of that country. The fevers of Egypt begin with the subsidence of the Nile; and those of Bussorah with the subsidence of the Euphrates; and the Arabs, to revenge themselves upon the inhabitants, once let loose the waters, and thereby produced a disease which destroyed fourteen thousand persons. In Artois, in Flanders, the south and south-west winds come over swamps; and though the part itself is not swampy, they bring aguish complaints to it; but as soon as the wind sets in from the sea, and from the north, these aguish complaints all disappear. I may mention that these north winds, which do not come over swamps, are accompanied by very dense and durable fogs; but no ague occurs from them. The same is the case in many parts of France and the Mediterranean. In 1528, the French army, in attempting Naples, was reduced from twenty-eight thousand to four thousand men;—simply from choosing an injudicious encampment near the Baiæ. Infinite is the mortality occasioned in this way, by ignorant or careless generals, from encamping an army near a marsh; and by governments, from permitting marshy lands to continue in the neighbourhood of cities. The instance of Walcheren, must ever be a disgrace to the government of this country. "There was no reason apparent," says Dr. Macculloch, "for perpetuating Calcutta; when, almost from the very hour of its foundation, by Charnock, its destructive situation had been demonstrated. That Holland should have persisted in inhabiting that Batavia, which it had studied to render more poisonous than nature had already done, by the model of its own pestiferous forefather, is a problem which Holland must be allowed to explain, as it best can."

But although moisture is not the *cause* of ague, yet moisture is indispensable to the decomposition of vegetable matter; and to the disengagement of the miasma. Decomposition requires a certain degree of moisture; and if you dry any thing thoroughly, whether it be a vegetable or an animal production, you prevent decomposition. A certain degree of moisture is necessary for the fermentation and putrefaction of vegetable matter; which fermentation and putrefaction give rise to the exhalations that produce ague. Hence, in a moderate swamp, you see why dry weather may put a stop to the disease;—namely, by putting a stop to putrefaction. You also see why, in extremely wet situations, there is often no ague;—because too much fluid also impedes putrefaction; but this wet, by dry weather, may be reduced to just sufficient swampiness for vegetable decomposition to take place, and malaria to be produced. Just as dryness would prevent decomposition, so will extreme wetness and moisture. If the matter which is to be decomposed, be diffused in a very large quantity of water, the putrefaction ceases, or is not evident; so that some places which, while very wet, were healthy, have been made unhealthy by being dried just sufficiently for putrefaction to go on vigorously; and again, other parts which were dry, and which never gave out any exhalations, have been caused to do

so, by a certain degree of moisture falling upon them. Thus you see that, according to situation, the same additional moisture may produce an ill, or a salutary effect. High grounds, therefore, may suffer from the same cause which removes all unhealthiness from *low* grounds. A certain degree of rain falling upon *high* ground, will not all remain there, but will roll down. Still it has moistened the parts sufficiently for decomposition to take place above; whereas, when it comes on the *low* ground, and there collects, it may be so abundant as to dilute all the vegetable matter, and prevent it from putrifying; and may so put a stop to the unhealthiness of the part. In this way an aguish fever, whether intermittent or remittent,—for I intend to include both when I say *aguish fever*,—has been put a stop to by inundating a swamp; and on the other hand, inundation has moistened a dry part sufficiently for exhalations to take place.

By recollecting this, you may explain a number of circumstances, which otherwise would appear contradictory. A river, by breaking loose over a marsh, has sometimes prevented it from being any longer the source of noxious exhalations. Where there was a marsh before, it has produced a sort of lake. In Batavia, for example, the rainy season is comparatively healthy; because the rivers and canals are then plentifully supplied with water, which flows on rapidly; and all the marshes are inundated. But in the months of July, August, and September, the waters are nearly evaporated; and fever is then much more malignant than at any other period. On the western coast of Africa, and in some of the West India islands, especially Barbadoes, fevers are rare during the long continuance of dry weather. There is not much water there, and what there is, is evaporated in dry weather; so that the vegetable matter becomes too dry for putrefaction. Fevers, on the western coast of Africa, are observed to be arrested in long *drought;* whereas, in Batavia, they cease during the *rainy* season. At Charles Town, in South America, (which is a swampy situation), bilious fevers prevail in hot summer weather; but in 1752 there was very intense heat, and universal health prevailed. The thermometer was 98° even in the shade; and the air was glowing; all vegetation was parched up, and decomposition was put a stop to by the intense heat. In summer, fevers frequently prevail in certain parts, on account of the rivers diminishing to a great amount. All rivers, of course, diminish in summer; but some lose a very considerable portion of their depth; or rather, we should say, of their breadth. The lake Bivière, in Sicily, loses two-thirds of its dimensions in summer; the lake Cagliari, in Sardinia, loses much; and so does the Caspian Sea. Of course, the sides of a river are always more or less dry; but in summer a great portion becomes half-dry. There is just sufficient moisture for decomposition to take place; and therefore ague prevails when the rivers are shallow.

A change in the course of a river, may drain a marsh completely; and in that way a part has become healthy, which before was exceedingly unhealthy. Sometimes the very reverse has taken place.

By breaking over dry land, it has caused sufficient moisture for putrefaction to go on. The sea has done the same. It has sometimes produced the greatest unhealthiness in a neighbourhood, by making its way upon the country, and producing a permanent swamp; whereas, in other cases, it has produced something more than a swamp;—it has deposited such a body of water, that no exhalations could be given out, although before they were emitted in great abundance. The Godwin Sands are an instance of a cured marsh, though the land is lost. An immense deposit of sand has filled up the marsh. The retiring of the sea will frequently cause agues; by leaving a marsh only, where the part was previously deluged.

As every river carries down a quantity of solid materials, so every river has a tendency to fill up its bed. It becomes more or less filled with solid matter, coming down from high land. A river may be completely filled up; so that the banks must be raised, or the country will become inundated. A marsh will be produced; and great unhealthiness take place. This is frequently remedied, for a time, by embanking a river; so that it shall still be confined within its proper bounds. I say "for a time" only; because the higher the river becomes, the more slowly it runs, and the less it drains the country; till at last it is useless. But in some countries people are prejudiced, or careless; and parts which were exceedingly healthy, become the seats of the most dreadful disease. There is an instance in Switzerland, of a part becoming very unhealthy to all around. Aguish fevers extend from the lake of Wallenstadt, over a great district, as far as Zurich. A river there (the Linth) pours its water into another river (the Mag); and that again into the lake. The Mag became stopped up, through neglect; and the neighbourhood all round, a few years ago, became one of the most pestilential districts in Switzerland; six thousand acres being thus converted into a marsh. At last the authorities had their attention forced to it; and it was remedied simply by turning the Linth into the lake, instead of allowing it to empty itself into the Mag; and by widening and deepening the Mag. The lake being a deep spot, receives all that comes down from the mountains; and the whole has now a free course. The obstinacy of the people,—in living in the midst of a pestilence, when they had it in their power to remedy it,—is hardly to be conceived; but it is no less true. I could give you ten thousand illustrations; but they all come to this point;—that a certain degree of moisture is necessary to the disengagement of malaria; that if you diminish the moisture, you diminish the malaria in one case, and increase it another; and that if you increase the moisture, you may also produce either of these effects. Thus it is that, according to situation, circumstances the most opposite, will have the same effect; and circumstances which are exactly the *same*, will have the most *opposite* effect.

But a certain degree of moisture, is not all that is necessary;—

there must also be a certain degree of temperature. We can preserve anything from decomposition, by an exceedingly low temperature; and by an exceedingly *high* temperature, we produce such changes that no decomposition can take place. We know that if meat be spoiling, we have only to cook it, and the putrefactive process is immediately arrested; and so it is with respect to the putrefaction of vegetable matter. A certain degree only of temperature is proper. If the temperature be increased, then you may have extreme decomposition, and disengagement of malaria; so that while the cold weather lasts, the people will be comparatively healthy; but when the warm weather arrives, the decomposition is such that the most fatal fevers prevail. Hence it is that aguish diseases are far more severe in hot countries, than they are in ours; and that they are far more severe in autumn, than at any other period. This, at least, is one reason; but there is another. In hot countries, and in hot seasons, there is far more vegetable matter to decompose. This is certainly to be taken into the account; but when we consider that an increase of heat produces a great increase of decomposition, we also see that fever must greatly be ascribed to the facility, with which decomposition goes on in a warm temperature. A low temperature, however, may be short of that which is sufficient to stop the disengagement of malaria; and, therefore, if a country be very unhealthy, and very swampy, you will in cold weather have aguish diseases. The cold is not such as to stop putrefaction; and the land is so moist, as to produce a very considerable disengagement. The reason that ague prevails so much in the spring, is that the soil, which was caked and dried by the cold of winter, is now moistened; and the temperature of the weather has increased. The cake has consequently been broken up; and therefore you will have vegetable exhalations in abundance. The vegetable matter, which was left on the ground the preceding autumn, becomes decomposed by the increased temperature. The reason that ague is so fatal in the *autumn*, is that the summer has produced a fresh stock of vegetable matter. The surface of the earth is covered by vegetable matter; it is in great part dying, and lies upon the ground to rot; the rain comes in the hot period; and what with the heat, the moisture, and the dead vegetable matter, exhalations of course take place. The great abundance of the vegetable matter to be decomposed, together with the heat, renders the autumnal fevers far more severe, and far more numerous, than the vernal.

The effect of moisture has frequently been seen, in a striking way, when rain has begun suddenly after a dry season. When a quantity of vegetable matter has been lying upon the earth, and has become caked, a sudden rain has been attended, on many occasions, by the most fatal diseases. From the moistening of the vegetable matter, putrefaction has instantly taken place; and exhalations in abundance have been emitted. Again, the reason that, when the autumn is over, these fevers cease, is that the greater part of the vegetable matter has

been decomposed; and the temperature of the atmosphere falls; and therefore is there not only less matter to putrify, but the temperature is not sufficient for putrefaction to go on with vigour.

Pasture lands, from being constantly moist, are very aguish; and yet on breaking them up and cultivating them, they are infinitely more so; and this from the same reasons that I have now mentioned. All pasture lands must be unhealthy; for they are all moist;—and they cannot be good if not moist; for the grass will not grow without moisture. But when you break them up, you make them more unhealthy; because you kill all the vegetable matter in them. Before, there were only portions that died; but when they are broken up, nearly all the vegetable matter is killed. This rushes into putrefaction; so that it is always found, that the breaking up of pasture lands is attended by far more disease, than existed before the land was so broken up. It may be a fact, however, that malaria is let loose from the earth by breaking it up. It is said that, in many countries, on the breaking up of the surface of the earth, these fevers are sure to prevail. It is said that, in the West Indies for instance, this process has been known for two centuries to be exceedingly dangerous. Cassan mentions that fevers, like the plague, will take place on land being broken up; so that labourers will sometimes die on the spot, if they remain there all night; whereas no harm arises if they be not broken up. Volney, the traveller, mentions this as an invariable observation in America. It is found also,—and the fact is precisely similar,—that on clearing away woods, the disease especially prevails. A quantity of malaria is let loose from the forest, when the woods are cleared; and more than that, a quantity of vegetable matter necessarily lies on the surface of the earth; which, although kept moist enough for decomposition, is prevented from decaying much, from the inability of the sun to penetrate to it; but on clearing the wood, the heat of the sun is admitted to the surface, where the vegetable matter is lying; and it then falls into a state of rapid decomposition. Hence it is found that the clearing of woods is always a dangerous process; and it may be so from two circumstances;—first, the malaria which is pent up in the woods is let loose; and, secondly, the sun has access to the vegetable matter which lies on the surface, and effects its decomposition. Besides, much vegetable matter must be killed by the process. It is said that the same effect will take place in Italy, if certain bushes be cut down. Whatever malaria may be in them, has then an opportunity to escape; and fever prevails to a certainty. The removal of woods has frequently been injurious, in another point of view;—by removing a protection. Some villages have been free from ague, while a wood existed between them and a marsh; but on cutting down the wood, they have become from that moment exceedingly unhealthy;—the wood having served the purpose of a screen. Some have imagined that it was the knowledge of this circumstance,—of this advantage of woods,—that caused them to be so venerated, and held so sacred in ancient times.

It has been said that stagnant water alone will produce ague, without any vegetable matter being in it; but we are to remember that this stagnant water will putrefy; which it certainly would not, unless it contained animal or vegetable matter. Water itself,—pure oxygen and hydrogen,—cannot undergo putrefaction; but soft water will putrefy; and as that is the case, it must contain dead earthy matter. If stagnant water therefore, although nothing can be seen in it, does produce ague, we may explain the occurrence by supposing that it contains vegetable matter. It is well known that the Thames water, however good it may look, when put into casks will putrefy; and it is said that the decay of the interior surface of the cask, is quite sufficient to explain this;—that if you put pure water into a cask, yet the wood of the cask being vegetable matter, and being next the water, becomes more or less acted upon by the water; and more or less undergoes the process of putrefaction, and so affords malaria. It is on account of this liability of the wood to be destroyed, that casks are always charred within; by which they are enabled to resist the putrefactive process.

Any portion of water, however small the collection, containing decayed vegetable matter, is sufficient to cause intermittent fever. Many places, therefore, which have only a small pond, or a small lake, produce disease. Many places, no doubt, are suffered to give ague, and aguish diseases, from circumstances which are entirely within control. It is said that an inveterate ague was produced by the canal at Versailles, though it was little larger than a fish-pond. Monfalcon quotes an instance of a fish-pond at Chantilly, which was remarkable for its pestiferous character. Many country residences, there can be no question, have been made unhealthy, from the custom of ornamenting them with woods, and little lakes of stagnant water,—*pièces d'eau d'agrément*, as the French call them;—*lacs artificiels*. Edinburgh is now any thing but favourable to ague; but there was formerly in it a lake, called the North Loch, which was famous for it. Agues prevailed in that district till the spot was drained; but now no agues are there at all. When I say "ague," I mean fevers of an aguish character,—whether remittent or intermittent; and many diseases of this description are unquestionably mistaken, every day, for real typhus. In order to the existence of ague, the situation need not be low, nor need there be a marsh. At whatever height water be hemmed in, of course vegetable decay may take place; just as though it were situated low.

Clayey soils are the most favourable for these fevers, on account of the clay retaining the moisture; whereas gravelly soils let it escape. You might imagine, perhaps, that the Delta of the Nile would be a great source of ague. Ague, Sir James Macgrigor says, is not unknown in Lower Egypt; but it is only seen sporadically. The reason of this is, that there is no stagnation of water; notwithstanding the existence of so much vegetable matter as is brought down to the Delta. In fact, there is so much agitation, as to have the same effect as too much water; so that putrefaction does not take place. Strabo

remarks the healthiness of Lower Egypt; and ascribes it to this cause. On the other hand, ague will continually occur in spots, where there is little more than a pool, or a puddle; but then the water is completely stationary. Even a ship may contain a source of malaria. I believe the fevers of ships, are very often *remittent* fevers; but are mistaken for *typhus*. They have often arisen entirely from the bilge water. Captain Smith says, he never knew fever in any of his ships, during a long service in the Mediterranean; and Captains Parry, Cook, and Sir Henry Baynton, all succeeded in preserving the health of their crews. They all had the holds of their vessels washed out daily, by means of plugs, till the water came out perfectly clear; so that no accumulation of filth could take place;—no accumulation of vegetable matter. This fact may be contrasted with one relative to the Powerful, a seventy-four gun ship; the crew of which, on their voyage from the East Indies, were nearly all disabled by fever; and the cause was found to be merely the ballast, which consisted of moist and putrid mud. Ships laden with sugar have the greatest mortality; and sugar is a vegetable matter. In fact, the most unhealthy cargo that a ship can carry, is sugar.

The castle of Flamandville, in Normandy, is situated high; but an endemic prevails around, in consequence of a mere moat, containing a quantity of vegetable matter, which gives forth pestiferous effluvia. A family, resident at the place for a length of time, was at last exterminated; but before that, they underwent a loss both of mental and of corporeal power. The same thing has been observed in the neighbourhood of many castles. The besieged and the besieging have both suffered, when the baronial castles were attacked; and the source of all the disease, was the moat surrounding the castle. The sentries were the first attacked. Down to the middle of the last century, one-third of the inhabitants at Bourg en Bresse were incapacitated; in consequence of the ditches, around the fortifications, containing a quantity of decayed vegetable matter. At Havre de Grace the soldiers were once known to be giddy, and to experience violent headache, five minutes after they had approached the ditches; and then they had violent fever. I saw several cases of ague in London, arising from the moat around the Tower. A stupid negligence, with regard to the moat, prevailed for a long time; a great accumulation of filth took place; and I continually saw patients with ague, from that part of London. The first case I met with, was that of a lady;—a relative of a medical gentleman in the neighbourhood; and not having been in the country, she could not imagine how she had contracted the ague. At last she told me, that she was in the habit of taking exercise on the ramparts of the Tower; and the circumstance of the moat, of which I had read so much in books, immediately occurred to my mind. I inquired whether it was in a filthy condition; and learned that it was so; but that the authorities would not cleanse it out. One department thought it was not its business; and another that it did not belong to its jurisdiction; and some medical men laughingly said, that it could not be supposed

they should press the subject; because it brought "grist to the mill." I believe, however, that in consequence of the representations of the profession it has been cleansed out.

Harbours, moats, and mill-dams, have all been sources of ague. In a mill-dam the stream is rapid; but the sides may be flat and wet. Flax-grounds have frequently been proved to have given origin to the same disease, in consequence of the flax lying upon the ground, in a state of decay. In Italy and Germany, fevers frequently prevail in the neighbourhood of flax-grounds; and these are instances of ague in dry, sandy, high places, owing to the hemp being dried there; and the fevers regularly cease, when the season for drying hemp is over. Indigo-manufactories have also been the sources of this disease. The inundation of a cellar, has frequently caused these fevers to prevail in a family; and the passage of a drain under a house, has frequently caused the inhabitants to continue the victims of fever;—that is to say, the house has been rendered unhealthy; and all the people residing in it, have been more or less attacked with fever, from time to time. Nay, the removal of stores has frequently been productive of fever. The water, under the stores, has been impregnated with vegetable matter, in a state of putrefaction. The removal of the stores has let loose the exhalations, which were pent up beneath them; and the men employed in removing them, have been known to suffer an attack of fever.

When we consider the peculiar susceptibilities of different individuals to the effects of morbid causes, we shall not be surprised that persons will occasionally catch an ague, from the most trivial exposure to malaria. We know that some persons are singularly liable to be affected by particular causes. Many persons, on approaching a hay-field, will be seized with asthma; particularly if the grass be sweet-scented. I believe it is not the hay which produces the affection, but the flower of the grass; so that they are attacked if they approach fields at the time they are in flower; which is at the period of hay-making. It is said to be not at all uncommon, for persons to be so affected from ipecacuanha. Some persons have been seized with asthma, from ipecacuanha being powdered in the house; nay, it is said that some persons have been seized with it, merely from a box of ipecacuanha lozenges being in the same room. At any rate, a trivial exposure to this drug, frequently produces the disease. We must have seen persons thrown into a violent salivation, from a grain of calomel; nay, I have seen it arise from the application of a little red precipitate ointment, or mercurial ointment, to a sore leg. From these various circumstances, we must suppose that there are some people, who are peculiarly susceptible of the effects of malaria; and therefore I can imagine sporadic cases of ague to take place, from a person merely passing through a market, in which decayed cabbage leaves may be lying. We all know that there is more or less putridity in these vegetable remains; they continually emit a noxious smell; and I can conceive that, even in a most healthy town, you may thus have a cause of ague. Ague is

sometimes ascribable to very common and trifling causes! without at all invalidating our general conclusions. A very slight collection of decayed vegetable matter may be supposed sufficient to produce ague, in a person extraordinarily disposed to it; and therefore, when we cannot account for the existence of the affection, from a person having been near a swamp, it is very possible that the case may be one of extreme susceptibility; that a minute quantity of putrid vegetable matter, has been near the patient; or that minute malarious exhalations have been wafted to him. And it is to be remembered that these miasmata will extend to a very great distance; and that, in very aguish seasons, places which are usually healthy, and not situated near much stagnant water, frequently become unhealthy. Dr. Macculloch's works are the best on this subject. They consist of two volumes on Marsh Fever, and Neuralgia; and one volume on Malaria.* It is his opinion,—and also that of several Italian physicians, and able military men,—that a single inspiration of malaria, may be quite sufficient to cause disease. If all this be the case, (and there is no reason to doubt it), you see that we are not by any means to reject the belief, that the disease always arises from such exhalations, merely because we can hardly tell how a particular individual, in certain circumstances, may have been exposed to them.

As to the distance to which malaria will extend, it is said that, in Italy, the ill effects of stagnant water are known to extend three miles; that they have reached from the lake Agnano, as far as the convent of Camaldoli, which is situated on a high hill. Lancisi (who first referred this disease to marsh-miasmata) says that, as thirty ladies and gentlemen were making an excursion of pleasure up the Tiber, the wind suddenly shifted to the south,—coming over the Pontine marshes; and twenty-nine were instantly taken ill;—one only escaping. They were all well before; but the wind coming over the Pontine marshes was impregnated with malaria; and twenty-nine were instantly affected by it. Dr. Lind, of Haslar Hospital, (who wrote on the Diseases of Hot Climates), says that when Commodore Long's squadron lay off the mouth of the Tiber, two vessels that were close to the shore were affected; while the rest, lying a little farther off, escaped. The difference of half a cable's length from the shore, has caused vessels to suffer or escape; yet Sir Gilbert Blane says that, in the West Indies, (and he heard the same respecting the channel leading to Calcutta), the malaria was observed to reach a distance of three thousand feet, and more. In Zealand, the distance (he believes) is far less;—owing to the comparative mildness of the malaria, and also of the temperature. It is the opinion of many authors, that the hotter the climate, the farther does the malaria extend; that if the quantity of vegetable matter be great, and the heat intense, it produces its effects at a very considerable distance; but that in cold climates, the vegetable matter and

* "Essay on the Remittent and Intermittent Diseases; including, generically Marsh Fever and Neuralgia; by John Maculloch, M.D.;" 2 vols. 8vo. Also an "Essay on Malaria," by the same author; 8vo.

heat being less, the exhalations are milder iu their nature, and less copious; and therefore it is supposed by Sir Gilbert Blane, (who had great experience), that in Zealand the distance is far less, than in many other parts. He says that, at the time of the Walcheren fever, no persons on board ship were seized with the disease which was prevailing on shore, although the channel between Beveland and Flushing, was only six thousand feet wide; and some of the ships lay nearer to one shore than the half of that distance. It is the opinion of many that the malaria will not extend to any great distance. Sir Gilbert mentions, that when the ships watered at Rockford, he found that if they anchored so near the shore, as to smell the land,—the smell of land-air being sometimes very perceptible at sea,—they were affected; but if they remained only two cables' length from the spot where they smelt the malaria, no inconvenience was experienced. It is said by Lind, that at Pensacola, a regiment lost a hundred and twenty men, and eleven out of twelve officers who landed; but the whole crew of a man of war, which was lying one mile from the shore, remained perfectly healthy. However, Dr. Macculloch (who has investigated this subject more than any one else; but who has carried his views further, perhaps, than most other persons will think justifiable) believes that malaria may be conveyed to an indefinite distance. He is convinced that it is conveyed from the banks of the Thames, over the hills of Kent; even to a distance of some miles from the coast. He argues in the first place, analogically, that dogs will smell the land long before it is visible; and, on the other hand, that the sea may be smelt very far inland;—that whales or sharks may be smelt, both powerfully and offensively, as far as the spouting of the animal is visible from the mast-head; and therefore he says that, if these things can reach such a distance, and odours produce such an effect, so may malaria or vegetable exhalations. He mentions that fogs and clouds go, of course, to an immense distance;—that it is a fact that malaria easily unites with fogs and clouds; and therefore he concludes, that as far as these will go, so far may the malaria extend. Moreover he asserts, as a fact, that he has found records in ships' books, of malaria having produced fever, at a distance of five or six miles or more from shore; and that the danger was instantly made sensible by the smell; so that the ship's crew would go below, or weigh anchor and run to sea. He says it is well known, that points in the coasts of Suffolk and Norfolk, and the eastern coast of Scotland, have ague; though there is no local source of malaria for many miles, and that there are some points where there is no source of malaria, for even a greater distance than that; and therefore he contends that it must be brought from Holland, and the northern shores of the Continent.

The effect of the east wind, in causing and renewing aguish diseases, is well known; but it can no more be the simple air itself, than pure water (oxygen and hydrogen) can produce ague. Wind, if pure, can no more be poisonous than pure water; and therefore the noxious property must be, as in the case of water *contained* in

it. Now the east wind is perfectly innocuous, in the regions which it reaches after having passed over healthy countries; and, *vice versâ*, other winds are as unhealthy in some parts of the world, as the east wind is here; that is, where those winds come over a marshy district; exactly as our east winds do. This is another argument adopted by Dr. Macculloch. He says,—still pursuing his argument,—that land under the trade winds, and ships in the equatorial seas, escape; and that St. Helena, being so much exposed to the east wind, ought never to be free from ague; whereas that is not the case. If the east wind blows over a frozen continent, or simply blows across the sea, (though of course, in its passage, it must imbibe moisture), it is found to do no harm. In order to be injurious, it must blow over land, where there is vegetable matter and moisture. For this reason, in one-half of the globe, the east wind is exceedingly injurious from the month of March to the month of October. In French Flanders, the south and south-west winds do the same harm, as the east wind in other countries. The east wind in summer is dry. Hence it has less conducting power; and thus, though we get ague from the Dutch ditches in *spring*, we do not get their remittent fevers of *autumn*. The east wind is so dry at that time, that it will not conduct the malaria; for a certain degree of moisture is as necessary for its conveyance, as for its production.

To shew the healthiness of the east wind, where it does not pass over a marshy district, I may mention that it is the salutary breeze of the burning islands of Western America; while many parts of France, Germany, Poland, and Russia, never feel its injurious effects. Dr. Macculloch says, that although "the east wind, after sweeping the burning sands of Africa, makes the side of Sardinia which is exposed to it a desert, and in Minorca will not suffer an orange leaf to protrude beyond a garden-wall, it is before the *east* wind that Mount Edgcomb roots its splendid trees even into the sea; —not daring to shew a leaf to the *western* ones; while in Southampton river it is precisely the reverse."

The *east* wind, from its excessive heat and dryness, or from its coldness and moisture, may be injurious in other ways than in producing intermittent fever. The Harmattan will not produce ague; but it is excessively hot and dry, and therefore an injurious wind. Again, all experience an unpleasant feeling from the east wind in spring;—not by its producing ague, but by its being excessively cold, and excessively moist.

Distant parts suffer more if they be hilly than if flat; and frequently the immediate neighbourhood of a marsh will escape in some measure, while a village or a town at some distance, if it be situated on a hill, suffers exceedingly. This fact seems to be capable of explanation, from the circumstance of hills attracting from the clouds their moisture, and every thing united with it. Malaria being conducted by moisture, and moving with the clouds, and the clouds being attracted to the sides of a hill, deposit their moisture and every thing else they contain; and thus you see that a hilly

part may suffer much, although it is situated at a great distance from a marsh. I mentioned that the convent of Camaldoli, which is situated three miles from the lake Agnano, suffers from ague. It stands upon a high hill. At Malta, the malaria produced under a cliff, never affects the spot itself; but produces direful consequences on a village situated above it. At Weymouth,—in our own country,—it is said that the back water rarely affects the immediate inhabitants; while those at a distance suffer. At St. Austle, in Cornwall, the disease prevails from some marshes at St. Blaizy. At Erith there is less ague in general, than could be expected; but houses that are situated high above it, often suffer very severely.

Sometimes a distant part will suffer, not from clouds conveying the moisture, but from currents of air. The locality of a part may be such, that a current will proceed in some particular direction. If currents pass over a swamp, the part exposed to them will necessarily suffer; and if there be a peculiarity in a current, you will have a part affected which you would not, *à priori*, expect to suffer. Captain Smith, in his "Statistical Table of Sicily," mentions seventy-six unhealthy towns and villages; and out of that number, thirty-five are situated on hills or declivities, and at a great distance from a marsh. When the wind blows from the south, being a warm wind, it has a tendency to ascend; and it is supposed that the southern wind, blowing over a marsh, and tending upwards by its temperature, affects high towns; while the colder northern wind does not affect those houses situated on the other side of the swamps, though placed equally high. We can easily conceive of a swamp, and towns on each side. When the wind blows *sonth* it will ascend, and high houses will suffer; whereas, if it blow *north*, it will not ascend to a house of the same elevation; but will remain near the earth; and in that way the house will suffer very little, or not at all. Hence you are to take into account a number of circumstances, when you see ague prevail in districts, where there is no marsh in the immediate neighbourhood.

There are some singularities, however, in the prevalence of this disease, which cannot be explained. At least many, perhaps, will not be satisfied with the explanation that is given. It is said that, on the high road to Chatham and Feversham,—comprising a distance of twenty miles,—the effect of malaria is only noticed on one side of the road. The injurious lands which afford the malaria, are situated about a mile off; but it is only detached houses on one side of a level road, that suffer. It is to be remembered, however, that the dews will spread in a similar way;—that they will spread to a particular spot, or stop at a certain bush. Every one may notice the same circumstance, in the case of a hoar frost. Now, as far as these will extend, so may malaria; and they will explain the singularity of such an occurrence, in some instances. Dr. Bancroft was credibly informed, that only one side of a particular street in Rome, was affected by ague or aguish diseases; and Baglivi says that the healthy spots of Rome, are separated from the unhealthy by a won-

derfully short distance. A similar circumstance is observed in Cadiz; and in many American states. In the latter, however, the reason is perfectly evident;—some streets are exceedingly low; and are built in districts near which there is a quantity of stagnant water.

It is in consequence either of the weight of these pestiferous exhalations, or of their uniting with moisture, and producing their effect when the moisture is deposited, that the lowest spots are generally the most dangerous; and this also accounts for these exhalations being most dangerous at night; for it may be laid down as a general rule, that malaria is most dangerous in a low situation, and in the night. It is on the ground, and near the lowest parts of a house, that moisture is deposited; and that being the case, the exhalations of malaria will be let loose there; and what is lowest will suffer most. Again, in the night the cold is greater than in the day; and from the cold being greater, moisture is deposited, and with the moisture malaria. Hence we have, in general, a sufficient explanation for the two facts I have just stated.

I could give you plenty of instances of the influence of difference in elevation, in causing a liability to ague. In the Spanish Town barracks, in Jamaica, there were three cases of fever in the *lower* story, for one in the *upper*. Sir Gilbert Blane says he was informed, by a medical man, that in 1781, at St. Lucia, one regiment, situated on the *top* of a hill, lost two hundred and seventy-one men, from intermittent and remittent fever; another regiment, on the *sides* of the hill, lost three hundred and eighteen; and a third, which stayed at the *bottom* of the hill, lost four hundred and eighty-six. The hill was called *Morne Fortuné;* and was situated eight hundred and seventy-two feet above the level of the sea. At Walcheren, the natives knew that those who slept in the upper stories, were far less liable to disease than those in the lower; and that if they caught ague, it was much milder. Sir Gilbert Blane also says he was informed, by Dr. Ferguson, that at St. Domingo, two-thirds more were taken ill on the *ground* floor than on the *upper* floor. In Italy the difference is so great, that an *erect* is known to be more safe, than a *sitting* or a *lying posture.* Although this is a general rule, however, yet there are exceptions to it. In some parts of Norfolk, danger is confined to the *upper* stories; but in those places there must be a particular current, which wafts the malaria in that direction.

The great danger of night, is always strikingly illustrated. Dr. Lind says that, in 1766, two hundred and eighty men who were landed at St. Thomas's, from the ship Phœnix, suffered; and all but three died. The ship's company likewise went on shore, in parties of twenty or thirty; and rambled about the island; but none of these who did not remain at night, suffered. Dr. Lind mentions that, at Batavia, a boat belonging to the Medway, was actually manned three times; every one having perished; and simply from the men having to attend duty on shore, every night. It is found that a cold night after a hot day, is much the worst. During the

heat of the day, there is more disengagement of malaria; and consequently when night comes on, there is far more to be precipitated. Cold and wet are always most operative after heat. It is thought by some that, in Italy, evening is more dangerous than night; and that there is no hazard after nine or ten o'clock at night. If this be a fact, I presume it arises from the whole quantity of malaria being by that time deposited. The effect of night, however, must be ascribed in some measure to mere sleep. It is right to take every thing into consideration; and all morbid causes act more powerfully in sleep, than in the waking state. Sleeping on damp ground at night is injurious; not merely because the person has lain upon the ground, nor simply because he has lain there during the night; but because he has lain on the lowest spot, at a time when there is more malaria than in the day-time, and when the body is less capable of resisting it than in the day.

Lind and Mungo Park were convinced, that malaria was precipitated with the rain; and in this way they noticed, frequently, that rain was unhealthy. Park says that, on one occasion, the rain had not begun more than three minutes, before many soldiers seemed drunk, and fell asleep; while others vomited; and he mentions that, in a storm, he himself felt disposed to sleep; and could not help it, although he was on damp, and therefore dangerous ground. Dr. Lind says, that the most unhealthy rains in Guinea, are those which occur first in the wet season; which looks as if malaria were precipitated in the rain; that in forty-eight hours, the rain rotted their shoes; and that when the clothes they had on, were hung up to dry in the sun, they became, in a few hours, full of maggots; shewing, probably, that much injurious matter was contained in the moisture, and deposited with the rain. As the rain falls more and more, there is generally less and less unhealthiness. This may be ascribed to two circumstances;—in the first place, to the quantity of malaria deposited by the first rain; and, secondly, to the continued rain which falls upon the earth, and producing so much moisture, that vegetable decomposition will not so easily go on. Hence, again, disease increases when the moisture declines.

I may mention, that the power of moisture to dissolve these exhalations, is rendered exceedingly probable from the fact, that a stench arises from pools and privies in damp weather. Every thing that affords an offensive smell, becomes worse in wet weather; and therefore the exhalations that produce ague, will also probably rise far more in wet, than in dry weather. The effect of moisture is sufficiently seen in the increase of illness.

It has been thought by some, that a mixture of salt water with fresh, prevents this injurious decomposition. However, this is a mistake; for those salt marshes, which are principally situated in the south, will give rise to ague in summer. For instance, around the Dol, in Normandy, where there is a salt marsh, scarcely an inhabitant escapes ague. Very often there is a severe intermittent fever

in Holland, after an inundation of the sea; and even when a place is well washed,—as Herne Bay, for instance, and the district around Reculvers,—aguish fevers frequently prevail. On the other hand, it has been contended, that a certain portion of sea water *augments* the prevalence of this miasmata. This would be not at all to be wondered at; because it is a mere hypothesis that salt water prevents it. Sea weed, being vegetable matter, has actually been the source of fevers of this description.

It is very probable that certain plants, and certain soils, are more favourable to the production of malaria than others; for sometimes there is malaria in spots where you would not suspect it;—where the grass looks fresh and green; and where you observe no signs of decomposition; whereas, in other parts, where there is a degree of decomposition, persons are perfectly safe. A friend of mine, who was travelling in Syria, saw a spot of grass fresh and green, though rather moist; and he intended to pitch his tent there for the night. But he was warned by some of the people of the country; who rode in haste to him; and implored him, as he valued his life and the lives of his retinue, not to pitch his tent there. He could not conceive why; and they told him that whoever remained on that spot at night, was sure to be seized with severe fever. There was nothing in the appearance of the grass, that could lead him to suspect any thing of the kind; but, of course, the lower portions were constantly dying and decomposing. It is, as I have just said, the opinion of many, that certain soils, and certain varieties of vegetable matter, are peculiarly favourable to the production of this malaria. Such would appear to be the fact; and very possibly is so; but whether this is to be attributed to the nature of the soil, or to the existence of certain plants, rather than of others, I do not know. Some believe that the different kinds of ague, arise from a difference in the vegetable matter. It is said, for instance, that tertians particularly prevail in Germany; that in Italy quotidians are most frequently seen; that in Hungary, fevers of this description are particularly attended with petechiæ; and the exhalations of the Pontine marshes, are said to produce fevers with short intermissions. Holland is remarkable for producing all sorts of fever;—quotidians, tertians, quartans, and every other variety. In Spain, Africa, and America, these fevers are remarkable for being attended with black vomit, and with yellowness of the skin. In some parts of Italy, these fevers are particularly attended by apoplexy; and in many parts they are particularly followed, or accompanied by neuralgia. In India and Africa, the *liver* chiefly suffers; at Walcheren the *spleen*. Even parts not distant from each other, are sometimes thus distinguished. It thus appears that there are many peculiarities, according to situation; but whether this is to be explained by a variety in the malaria, I do not know.

There is one description of bog, which does not produce malaria;—namely, peat-bog. But here there is no putrefaction; decomposition having taken place in a peculiar manner. The vegetable matter be-

comes carbonized; and there is not sufficient heat for putrefaction to occur. But it is said that peat-moss, when in a certain latitude, and on a certain level, can putrefy; and then, I believe, ague does prevail. That peat-bog does not putrefy, is shewn by a fact stated on good authority; namely, that animal matter thrown into it will not putrefy; but it is said that where peat-moss is placed in situations where it is warmer, and upon a proper level for moisture, it will putrefy and produce ague, just as other kinds of vegetable matter will do.

Now that it is *vegetable*, and not *animal* matter, which produces ague, is proved by this circumstance;—that no person has this disease from being exposed to the most intense animal exhalations. Thousands of carcases are annually employed in many manufactories; as, for example, in sal ammoniac manufactories; and yet no person is known to contract an ague from them. Indeed, so far from it, that the most crowded places generally escape intermittent fevers. That part of Rome inhabited by the Jews, and called the *Judaicum*, is full of animal filth; but it escapes ague; while the elegant streets in the neighbourhood, suffer from it very severely.

Fire and smoke, especially tobacco-smoke, appears to keep away ague. Malaria not being the produce of dead *animal* matter, or effluvia arising from living bodies, but of vegetable exhalations, the more men and animals are crowded together, the less access is there for the malaria; and it is generally supposed that the addition of smoke, of every description, has a great tendency to prevent it; and therefore those who live in the most smoky, crowded, dirty places, are situated in the most favourable manner with respect to ague. It was once imagined, however, that the smoke of coal was particularly injurious; and therefore it was made a capital offence to burn coal in London; and forges were only allowed in the vicinity. Sir Gilbert Blane mentions that, in the Tower, there is a document relating to a person who was executed in the time of Edward the First, for burning coal in London; though it has since been considered to be a great promoter of health. Perhaps smoke, whether of coal, or wood, or of tobacco, may act by merely taking the place of the exhalations, and preventing them more or less from entering. It may be, however, that they act by their warmth. Napoleon, when with his army in Italy, was in the habit of employing fires, to a great extent, to keep away malaria; and he did it with great success. But here the heat must have been useful, by dissipating moisture and cold. Dr. Lind mentions, that when the Edgar ship of war was off the coast of Guinea, in 1765, the crew were very sickly, and many of them died from fevers of this description; but in the crew of a sloop of war which always accompanied her, very few were ill, and none died. In the latter there was a fire for cooking, on the same deck where the men lay, and which filled with smoke the spot where they slept; whereas in the Edgar, from the particular arrangement of the vessel, there was no smoke whatever between the decks. Here were two ships off a country which afforded a vast quantity of malaria.

The crew of the one remained healthy; and that of the other became diseased, in the way I have stated; although the only difference between them was that, in the former, the part where the men slept was constantly, or almost constantly, filled with smoke.

It appears quite certain, that intermittent and remittent fevers are not contagious; though formerly ague was considered to be so. Dr. Fordyce, who was almost one of our own day, says (both from his own knowledge, and a reference to the opinion of others) that ague is contagious. Dr. Cleghorn, in his work on the Diseases of Minorca, says the same. Dr. Wells, a colleague of Dr. Fordyce at St. Thomas's Hospital, accounts for the opinions of the latter by remarking, that he (Dr. Fordyce) fancied that *continued* and *intermittent* fevers, were mere varieties of the same disease; and as it appeared, in those days, that continued fever was contagious, so he was obliged to maintain that *ague* was contagious. Dr. Cleghorn's mistake is supposed to have arisen from his having observed, that most of those who were about the sick, in Minorca, had the disease; forgetting that it did not arise in consequence of emanations from the sick, but from the situation in which they were placed. Of course it is no proof whatever that a disease is contagious, that you catch it from going to see a person labouring under it; for he may be in the very spot where he contracted it, from local circumstances; and in going to him, you go to the spot which has given *him* the disease; and which may therefore give it *you*. In order to prove that a disease is contagious, there should be a sufficient number of instances of persons going from the place where they contracted the disease, to a healthy part; and there giving it to others. There is no reason whatever to suppose that agues are contagious; though, formerly, not only were *they* supposed to be contagious, but even *scurvy* was also pronounced to be communicable to others.

The chemical nature of malaria, or marsh-miasmata, is unknown. It is not carburetted hydrogen; and no known chemical substance has the same effect. The air of marshes is said not to differ chemically from the air of any other part, with respect to its quantity of oxygen. There is no reason to suppose that it is a deficiency of oxygen, or an excess of carbon, or the presence of carburetted hydrogen, that renders the air pestiferous in this case. It is said by Dr. Leisle, that malaria has no smell. Thus much, however, is known;—these exhalations may be suspended by aqueous vapour. Indeed, it is said that they never rise but with some lighter body;—that they require to become so suspended, in order to rise at all. Being, however, suspended by aqueous vapour, they are even more deleterious than contagions; for, like contagion, a momentary application is sufficient, in many cases, to produce the disease; and, unlike contagion, they may be wafted, and produce their effect at a very great distance; whereas contagion spreads but a very short way, and after a certain distance is destroyed. Malaria, like other gaseous bodies, very easily finds a barrier; so that, in Italy, a gauze veil is

said to be efficacious in preventing its effects upon the human body. On this point I can only repeat what I have read.

If these exhalations be very strong, they may kill instantly. Many allow that fever may begin in half an hour after exposure. Occasionally the exhalations have been so intense, that labourers, in France and Italy, in breaking up the ground, have died on the spot. Other persons have been seized with giddiness, and some have even died, on looking into a ditch, or a drain, around which aguish fevers prevailed. Persons, who have been scarcely exposed to the deleterious exhalations, have been immediately seized with vertigo, vomiting, and syncope; and from that moment have had regular intermittent, or remittent fever. But usually their effect does not occur till a certain period has elapsed. In South Carolina it is said, that eight or ten days is the shortest time which elapses, between exposure and the appearance of the disease. The reason for so long an interval may be, that there is less heat there, than in many other parts. Dr. Wells believes that the autumnal agues of that country, do not appear till spring; —that is to say, the agues which we see in spring, are the result of exposure in the preceding autumn. He founds his opinion on the fact, that strangers visit South Carolina in the spring, with perfect impunity. Dr. Lind mentions having seen these fevers take place, the very morning after exposure. Dr. Bancroft gives an instance of the disease occurring instantly; and then other cases, which did not take place for many, even for nine months. Dr. Bancroft likewise ascribes the agues of spring to the previous autumn; and for this reason. He says that he has seen persons seized with ague, after they have returned to England from a warmer climate, where they had been exposed to miasmata; and that they have experienced the disease at too early a period in the year, for it to have arisen from malaria, at home. Probably, the earliness of the period at which ague occurs, is in proportion to the intensity of the heat, and to the quantity of moist vegetable matter. It is certainly very common, in England, for harvesters who have worked in aguish districts, and have been exposed to the exhalations in autumn, not to be affected till the east wind blows, in the following spring. I have seen very many cases of persons, who have left an aguish part in perfect health. and have remained so for some time,—even for months; when by chance getting wet through, or being exposed to a cold damp wind, they have been seized with ague. Dr. Maculloch doubts these long intervals; but I have seen them in too many instances, to entertain the least doubt whatever.

By habit persons become rather insusceptible of the effects of these exhalations; by habit they cease to have ague when exposed to malaria; or if they do have it, it assumes a very mild character. This is very commonly observed, in what are called the *pernicious* districts of Italy, France, and Sicily; in which districts those persons, chiefly, are susceptible of its operation, in whom glandular disease has been induced. To shew the effects of habit, I may men-

tion that General Monnet (a French officer) found that, in a malarious situation in Walcheren, there was only one-half the sickness in a regiment, during the *second* year, that there had been during the *first;* and that during the *third* year his men remained at the place, there was no sickness whatever. The inhabitants of one marshy district, when they go to another, suffer less than strangers;—less than persons who have gone to a marshy district, from a place that was perfectly healthy. A physician in my parish used to relate a story, from his own knowledge, of a party going up the Thames; of which party only one lady caught an ague. She had always lived in Edinburgh;—a high, dry, healthy spot; while all the rest of the party were inhabitants of a malarious place.

But it is said that one unhealthy place does not, by any means, *always* give indemnity to an individual who goes to another; and that a place to season an individual perfectly for another, must be situated between the tropics, and not have a cold winter. It is found, for example, that Gibraltar will not season a person for the West Indies; but then Gibraltar is not situated between the tropics. Such a seasoning as would render a person altogether insusceptible of the disease, can only be obtained between the tropics; where we can conceive malaria to be produced in the most intense degree. It is also to be remembered that, when a person has once had ague, he is very liable to a return of it from a slight cause;—such as from the blowing of a cold, wet, east wind; or from getting wet through; or from being, in any way, thrown out of health. He is rendered liable to have the disease renewed from slight causes; but altogether he is much less sensible to the influence of malaria.

Whether persons, however, have had ague or not, if they be constantly exposed to malaria, the constitution is impaired. They acquire a dull heavy look, and are bloated; or they are emaciated, shrivelled, pale, sallow, and weak. Sir Gilbert Blane says that the people residing at Walcheren, were far less subject to aguish affections, than strangers; but that they all looked sickly. Yet these Dutchmen would not allow that their climate could be unhealthy; and when they saw one-half of the English sick, through their noxious climate, they would not allow that it arose from the filthy ditches; but ascribed it to errors of diet, and the bad habits of the English. The liver and spleen are much disposed to become diseased; and dropsy to supervene. In the worst vallies of Switzerland, poor persons are shrivelled; young persons look old; and middle-aged persons appear in the greatest state of decrepitude. In these vallies, there is always a great quantity of malaria pent up. Indeed, so great is the injury produced by malaria, that whereas the average of human life in England is fifty years, in Holland it is only twenty-five. In some parts of France, which are very pestiferous through the malaria, you will find that the greatest average age is twenty-two; while in some it is only twenty and eighteen; and in others it is only ten. In some parts of Africa, and the East and West Indies, the average is as low as this. Yet many persons, who have not been

previously exposed to malaria, escape it as well as the Dutch, who have been accustomed to it. The Dutch, who live in the midst of it, will not allow it to be unhealthy; exactly as a person of dirty filthy habits, believes himself to be as clean as is necessary. Persons, however, although well-informed on these matters, will frequently, when they come to an unhealthy place, be obstinate, and act the part of mules; and many such have suffered for it. You will find it stated in "Captain Clapperton's Voyage," that the Captain himself, Mr. Pearce, Dr. Morrison, and Mr. Houlton, a surgeon, while on an expedition to Africa, lay all night on the banks of a creek, when there was no occasion for it; and the next night they lay in a market-place, though there were houses enough for them to have entered. The following day, Captain Clapperton was seized with fever; Dr. Morrison was seized in two days more; Captain Pearce the next day. Lander, their servant, was seized next; Mr. Pearce and Dr. Morrison died soon; and Mr. Houlton and Captain Clapperton died ultimately. They were all warned of the dangers of thus exposing themselves. You will every day find instances of this awful obstinacy; —this total disregard of human life. Because the Dutch are obliged to have dykes and ditches in their own country, they have surrounded themselves with them, when there was not the least occasion, in the East Indies;—merely, I suppose, to be like their brother frogs at home.

It is said that, in very unhealthy places, even brutes are known to suffer. Dr. Macculloch says he heard that a dog, at Guernsey, had a tertian ague; but whether this is correct, I will not pretend to say. He adds that epizootic diseases frequently prevail at the same time with marsh-fevers; and that in St. Domingo, the dogs are always the first affected.

Malaria is the constant scourge of the earth;—not the *occasional*, but the *constant* scourge. It produces not only fevers, but very frequently dysentery, cholera, and sometimes neuralgia; and it causes an intermittent or remittent character to be given to other diseases; and even when it causes no positive disease, it undermines the health. Malaria abounds to a frightful extent in Greece, Italy, France, America, Asia, and Africa. We know nothing of it here, compared with the violence of its ravages in those parts. However, it was once far more injurious in this country than it is now; but from the energy and industry of the English character, such extraordinary improvements have been made in every thing to promote the well-being of man, that nothing abroad can be compared with our advantages. You know that Southwark was once an entire swamp; and at Westminster there is a toll-gate, called the "Marsh-Gate," from being situated in a place where formerly (and not very long ago) there was a marsh. From the improvements that have been made, however, ague is now comparatively rare in London. It prevailed to a great extent before the fire of London in 1666; but from that time the place was better drained; so that the fire did good, as no doubt the cholera will do. Before the fire, ague raged like a plague.

Between 1667 and 1692, no less than two thousand persons died in London of dysentery, arising no doubt from the same cause as ague. So great, however, has been the reduction, that in 1728 there were only forty-four deaths from ague; in 1730 only sixteen; and in the bills of mortality for the first ten years of the present century, there are only four deaths from ague recorded. Within the last five or six years, agues have increased through the country, and in London; and this may be easily explained. They have not increased to what they were formerly; but still there has been an increase. Sydenham says that they disappeared in London from 1674 to 1678; and they disappeared in Plymouth, Huxham says*, from 1755 to 1760. They were absent from Portsmouth for three or four years. They returned again in London epidemically in 1751, 1753, and 1754. Sydenham says that they returned again from 1677 to 1688; and they also prevailed at the beginning of the last century. These are all accidental occurrences. It has been said by Dr. M'Michael, of the Middlesex Hospital, that during the few years that ague prevailed so much, the average heat was greater than when it disappeared. The heat being greater, of course there was more vegetable decomposition. To show the increase of late, I may mention that in 1823 I had but eight cases of ague; in 1824, I had fourteen cases; in 1825, fifteen cases; in 1826, forty-four cases; in 1827, fifty-three cases. The number then declined; so that in 1828 I had but twenty-seven cases; and in 1829 I had only eight. If we had accurate accounts, we should perhaps find that when ague increased in former times, the average heat was higher than usual; just as it has been observed to be by Dr. M'Michael, during the last few years that ague has become prevalent again.

Persons who have once had ague, or who have it upon them, are much disposed to exhibit a more or less aguish form of any other disease under which they may labour;—that is to say, when a person is the subject of ague, it is very common for diseases to become more or less intermittent; and this is especially noticed in aguish countries. Rheumatism, ophthalmia, vomiting, and purging, may all be intermittent, and even periodical. However, it is quite certain that, independently of malaria, many diseases will become intermittent. Insanity is sometimes intermittent. I have seen a person mad once a-year, or once in three years. Palsy is likewise occasionally intermittent; and in one case I saw it periodical. It came at a particular hour in the day; but the patient had had ague, many years before. Dr. Macculloch, however, ascribes a vast number of diseases to malaria†; but there cannot be a doubt, I think, in any one's mind but his own, that he has carried his ideas to an extravagant pitch. He has done great good by attracting the attention of persons to malaria, more than it was before; and his writings are very powerful and learned; but I think no one can read his publications without perceiving, that he had one idea constantly before him. That idea was

* "Observationes de Aére et Morbis Epidemicis Plymuthi factæ."

† See his Treatise on Malaria, already referred to.

malaria; and he ascribes infinitely more to it than reason can justify. However, notwithstanding I am satisfied of the extravagant length to which he pursues his ideas, yet I am equally satisfied that too often we do not ascribe diseases to malaria, when they really arise from that source. We frequently meet with sporadic cases even of ague, which cannot be easily traced to malaria; but I have no doubt that, if we could ascertain all the circumstances, we should find that the individual has a striking tendency to it; and has been exposed to malaria by passing through a market, or some other place, in which there was vegetable matter in a state of decay. It is also to be remembered, that though the influence of malaria is so great, yet cold and wet, and other causes of debility, will induce ague, without the reapplication of malaria, when a person has once had it. Sometimes, too, when malaria has been applied, the disease does not occur till such circumstances as these have taken place. I mentioned, in my introductory remarks, that the *predisposing* will sometimes become the *exciting* cause. The exciting cause of ague is unquestionably malaria; but sometimes it will only act as a *predisposing* cause; for it will lie dormant in the system till the person gets wet through; in which case the latter is really the exciting cause. From all the circumstances, I am convinced that many cases are aguish, where there is no suspicion of their true nature.

The proximate cause of ague,—the real essence of that state which is always present when the symptoms occur,—is unknown. We can say, with certainty, that it is a peculiar state; for a person, in the intermission of ague, is perfectly well. There is frequently no disease to be found, whether inflammatory or anything else, of any particular organ. Again, ague frequently cannot be removed by antiphlogistic measures; though occasionally it certainly may; as well as by anything, in fact, which makes an impression on the system. Again,—inflammatory diseases are not cured by sulphate of quinine, and remedies of that description. The disease *may* be inflammatory, and often *is* so; and requires antiphlogistic measures; but its *essence* is not inflammatory;—at least I know no proof of it. It may be inflammatory; but there must be something more than inflammation.

It is impossible to say how it is cured by the measures which are specifics in the disease;—as, for instance, bark. It cannot be by curing inflammation; neither can it be by irritating the stomach. Some have affirmed that bark only acts by irritating the stomach; but if that were the case, brandy and cayenne pepper would do just as well; and so would corrosive sublimate. Nor can I conceive that specifics operate by strengthening the patient. We might give a person full diet, and take care that he has regularly exercise, and improve his strength in every way we can; yet we should not cure his ague; whereas a few grains of quinine,—a quantity too small to strengthen the body directly,—continually puts a stop to it. I cannot pretend to say how it is that remedies act in curing the disease; but of this I am satisfied, that it is not what people pretend it to be. The remedies do not cure it, as people allege, by strengthening, or

by stimulating, or by any similar operation. We can only say there is a peculiar state; and that remedies cure it by a peculiar operation. This is, I acknowledge, saying nothing; but, at any rate, it is not advancing unfounded hypotheses; and fancying ourselves wise, when we are really ignorant. Arsenic, which cures ague very well, is not a tonic. It will debilitate the body; cause it to tremble; and depress the powers of the system; and yet a small quantity will stop the disease. Why a remedy of this sort is called a tonic, I do not know.

As to the diagnosis, we sometimes have a little difficulty in distinguishing ague from hectic. Hectic is a disease which continues for a length of time; and so may ague. It is called *hectic*, from being placed in the habit (ἕξις); being a *continued* disease;—that is to say, lasting for a length of time. It also resembles ague in another respect;—it is more or less intermittent. In hectic, however, the rigors are irregular. All the stages, too, are irregular;—one comes before the other, without any sort of order. After a time, in hectic, there are no rigors;—nothing but sweating, constant feverishness, and a quick pulse; and this feverishness is excited by taking food, and by the slightest quantity of nourishment. There is generally profuse sweating on dropping asleep;—the moment the patient drops asleep, some part of the body is in a sweat. In ague, when the sweating is over, the person is comparatively well; but in hectic, so far from being better, the patient feels weaker. In hectic, there is a red patch on the face, the palms of the hands, and the soles of the feet; the tongue is moist, and generally red. In the urine there is not the lateritious, red, brick-dust sediment of fever; but a pink deposit. In hectic, there is not the exposure to the cause of ague; and there is not the aguish face;—that peculiar cast of countenance, which is so often seen in ague. In hectic, there is frequently a local disease;—suppuration in some part of the body; and there is an exacerbation at night, and frequently at noon.

No one of these symptoms alone, will enable you to distinguish the disease; because ague is sometimes irregular;—recurs at no certain time; and is, perhaps, even almost *remittent;* so that you may have to make the distinction between *intermittent* and *remittent* fever. In ague you may sometimes have profuse sweating, and little else. It is therefore necessary, in making a diagnosis, to take all these circumstances into consideration; and if you do, you will, in ninety-nine cases out of a hundred, be correct. Now and then, however, there may be a little difficulty. Sometimes you have ague and hectic together. I have seen hectic in a person labouring under phthisis; where there were rigors, increased heat, and sweating, from ague; and increased heat and sweating from the suppuration; so that really the case was one of difficulty. There was at the same time, the aguish face; so that it would have been difficult to make the distinction between the diseases, had I not known there was suppuration in the lungs. The aguish face, and the circumstance of having been exposed to the cause of ague, shewed that probably ague was present; but the suppuration also shewed that hectic fever

was present. If you take pains with your cases, you can rarely be deceived. Now and then there will be a difficulty; but that will occur in instances where the hectic fever is attended by great rigors; or where, on the other hand, ague is assuming a *remittent*, rather than an *intermittent* character; and the patient has a local affection. You must also remember that rigors will occur without ague or hectic. Many persons, from mere nervous debility, will experience rigors; many persons will not be able to do their business, and their teeth will chatter, merely from depression of mind. Again, persons with a stricture are subject to rigors. Some persons always have rigors when a bougie is passed; and without that, simply from a stricture in the urethra, many will experience the same. If you find the rigors come on suddenly, and there is a stricture in the urethra, you ought to doubt whether there is ague. When rigors occur from stricture, or some other disease of the urethra, there is generally no heat or sweating. Neither is there the aguish countenance; nor can you ascertain that the individual has been exposed to malaria. If, however, you still have doubt, after all your inquiries, it is best in all cases to give the remedies for ague. If they be properly managed they can do no harm;—at any rate the sulphate of quinine can do none. The diagnosis of *intermittent* from *remittent* fever, is an easy matter. It is a mere circumstance of degree. If there be a *perfect* intermission, we call it "ague;" if it be *imperfect*, we call it "remittent fever."

The prognosis in ague, in this country, is almost always favourable. You may almost always promise a speedy cure. If there be conjoined with the ague a local structural disease, of course that part of the prognosis must stand on its own foundation; but the ague itself you may generally cure. If its type be quartan, you cannot promise so speedy a cure, as if it be tertian or quotidian; and I believe you are placed under the same restrictions, if the disease be autumnal and not vernal. An autumnal ague does not yield so readily as a vernal ague; and, indeed, the latter usually yields so easily, that it often ceases spontaneously, after a few paroxysms;—some think after seven. It generally ceases when the warm weather comes in; and will frequently do so on a person changing his residence. You will recollect it is the ague of *spring*, and not of *autumn*, that is fit for a king. There is a contrary proverb for *autumnal* ague:—

"Febris autumnalis
Est longa aut lethalis."

In hot climates, and even here, many *intermittent* fevers become *remittent;* and from being remittent they will become *continued*, unless vigorous measures are adopted; and may prove rapidly fatal, by congestion of the head, thorax, or abdomen. It is in hot countries, and in hot weather in this country, that we have to give a guarded prognosis. In hot countries it is common for patients to die early in the attack, in consequence of the enormous congestion which occurs in the head, chest, or abdomen. Now and then this

may be the case here, from some peculiarity in an epidemic. We have always to consider, therefore, in giving a prognosis, whether there is any peculiar form of ague present; and if that be the case, and if it be a form that is sometimes fatal, our prognosis must be more or less guarded; although, without that, we should give the usual prognosis. We have no idea, in this country, of what aguish fever, remittent or intermittent, is in hot climates. In Italy, they are called *pernicious* fevers; for as soon as a person is seized, he may fall into a comatose state, from which he never recovers; and, on inspection after death, the greatest degree of congestion is found in the lungs and head, and also in the abdominal viscera. In this country, however, we may almost always promise, not only a *cure*, but a *speedy* cure; and that by means not at all severe;—*tuto, cito, et jucunde.*

The means which we employ for the purpose of curing intermittent fever, may be divided into those which are had recourse to in the *intermission* of the disease, and those which are employed during the *paroxysm*. With regard to the latter, the greater number of them are adopted rather with a view to the temporary *alleviation*, than to the *cure* of the affection; and I need not say that they must be very different, according to the stage in which they are employed. In the *cold* stage, common sense would point out that there should be plenty of covering, and warm drinks; and some have recourse to the warm bath. It would, however, I conceive, be better to employ dry heat; for warm air may be easily and instantly conveyed to a patient when in bed, by having something under the clothes to raise them, and a tube continued from above a spirit lamp. Thus you surround the patient with hot air; and you may convey it in any quantity you please, and of any temperature. Something like an inverted funnel is placed near the bed, with a spirit lamp under it; a tube goes from the extremity of this funnel-shaped body, and is conveyed under the bed clothes; so that the air is dispersed throughout the bed. The degree of heat may be regulated, by altering the proximity of the lamp to the funnel. I think, if the cholera should make its appearance amongst us, this will be found by far the best mode of applying heat externally*; and on this account, particularly;—that when you employ vapour, the patient for the most part must be in a sitting posture; or at any rate must be taken out of bed, and more or less exposed after the bath. But, in extreme exhaustion, it is a material thing to avoid all this, and to keep the

* Since these observations were delivered, the cholera *has* made its appearance among us; and the contrivance indicated was extensively employed. Having been led to the subject, we may notice the admirable manner in which heat was applied externally, in the Cholera Hospital at Edinburgh. Every bed was furnished with a hollow "tin-mattress" (as it was called); which could, at any time, be filled with steam, by means of a pipe which communicated with a boiler. This hospital, besides the unwearied services of Dr. Mackintosh, enjoyed the advantage of being superintended by Mr. Meikle, surgeon in the East India Company's service; who brought to the task an extensive acquaintance with the disease in India, and the experience derived from repeated attacks of it on his own person.

person horizontal; and by using the contrivance I have mentioned, you need not take him out of bed, or remove him from the horizontal posture. Heat may thus be employed, to an extent sufficient thoroughly to warm the surface; and friction, especially to the extremities, may be had recourse to at the same time;—just as grooms rub shivering horses, on the legs, and even on the ears. If it be right to apply heat, during the intensity of the cold stage of intermittent fever, I imagine that this contrivance will be found much better, than either the hot water or the vapour bath.

Warm liquids, of course, appear to be indicated; but you should be on your guard against administering real stimulants. It is very well to apply caloric by means of hot liquids; but by giving stimuli (such as brandy and wine) you incur the risk of doing more than you intended;—of increasing the subsequent hot stage; of inducing delirium; and causing congestion and inflammation of the head, and internal organs. I should therefore give hot diluents, or at the utmost hot *spiced* diluents; rather than alcohol, or things which are in themselves *real* and *permanent* stimulants.

A remedy has lately been recommended, which one could not *à priori* imagine to be proper; but in favour of which there is very strong testimony. I allude to the abstraction of blood. The best information you can have upon this subject, is to be found in Dr. Mackintosh's "Practice of Physic." * I believe he is the gentleman who first advised, and put in practice, this mode of treatment. You are aware that, in the cold stage of fever, the circulation is greatly deranged. The internal parts are in a state of congestion; the head, lungs, heart, and all the organs the veins of which go to form the vena portæ, as well as that vein itself, and its divisions, are in a state of extreme turgescence; and by removing a certain quantity of blood, you unquestionably diminish this load. You give ease to nature; and it is found that the loss even of a small quantity of blood, relieves more or less the general uneasiness of the patient. I mentioned that, in hot countries, where they have what are called *pernicious* fevers, it is very common for those fevers to be attended by such a degree of congestion, as we rarely see in this country;—congestion which speedily proves fatal; and it must therefore be a very great point, in hot countries, to bleed as early as possible. Dr. Mackintosh mentions, that the cold stage is shortened by this practice; that the hot stage is either prevented, or diminished in violence and duration; and that many cases are entirely cured. You will find a report on this subject by Dr. Stokes, in the "Edinburgh Medical and Surgical Journal," for 1829; which is not altogether favourable. He says that venesection is more or less useless, and more or less injurious, in different respects. He says it is beneficial in removing the local symptoms; in removing the symptoms of congestion about the chest and abdomen;—which is just what one would imagine. But, he

* It is in the later editions of his work, that this subject is most fully treated. See also two papers published by him, in volumes xxvii and xxviii of the "Edinburgh Medical and Surgical Journal."

says, he was always compelled to exhibit quinine sooner or later; and he adds, as a reason for limiting venesection to those cases where there is coma or inflammation, that a friend has informed him of some patients, so treated, who never recovered. There can be no doubt, I think, that the practice is not so injurious as one would, perhaps, imagine before hand; but that, on the contrary, it frequently does a great deal of good; for it removes the local symptoms, frequently shortens the complaint, and sometimes cures it. As far as I can understand, it is, for the most part, rather a means of *alleviation*, than of *cure;* but I have no doubt that, in many cases abroad, where the congestion is extreme, it is imperiously necessary. I have never myself had recourse to it; and therefore cannot speak of it, except as a matter of opinion. I put the testimony of others together, and infer for myself; but I have no facts to give you. I have never seen a case of ague, which I thought required such treatment. I never saw a case which I could not cure by the sulphate of quinine; and knowing this, and not seeing any violent local symptoms during the cold stage, to make such treatment necessary, of course I have never employed it.

Speaking of venesection in general, and not of the cold stage in particular, Dr. Lind says that he, and two others, had each three patients with ague. Each bled his three patients; and each lost one.* This, however, is saying very little, unless we knew the particulars of the cases. Dr. Mackintosh says that it is always safe, often shortens, and sometimes cures; but as I find that I can always remedy the affection by the sulphate of quinine, in some quantity or other, I have not thought it right to take away blood, and thus impair the powers of the patient. There can be no doubt, however, that it is a remedy to which it is our duty to have recourse, if we find great symptoms of congestion; and if we fear that the next attack will prove fatal.

Opium is found both to shorten and to alleviate the cold stage. I have given it with very great success. The best authors will tell you, that a full dose of opium certainly shortens this stage, and always alleviates it; but still, if I found great congestion of the head, or of other parts, I would certainly order bleeding, in preference to opium. A tourniquet has sometimes been applied to an extremity, for the purpose of producing early excitement. One would conceive that, by this means, internal congestion must be increased. If you compress the femoral or brachial artery, there must be a larger quantity of blood thrown upon other parts; and if such a remedy does good, it must be by producing such a load, as will stir up nature to attempt its removal; so that the body will be hurried out of the cold stage, more quickly than it would otherwise have been.

When the *hot* stage comes, we have to give cool drinks; to take off some of the clothes; and to employ, if it be necessary and advisable, the tepid bath; or warm affusion, or warm ablution. There

* "Essay on Diseases incidental to Europeans in Hot Climates; with an Appendix concerning Intermittent Fevers."

would, I should think, be no harm in *cold* affusion, or *cold* ablution; neither should I hesitate to bleed in the hot stage, if there were any congestion, or any inflammation. A cure has now and then been effected, in the hot stage, by a person jumping into a pond; which is a cold bath; but I believe this is rather a dangerous practice. Opium, in this stage, has likewise been found of use. Dr. Lind says that he found opium useful in the hot stage, both in shortening its duration, and mitigating its violence. It would appear, then, that venesection is admissible in the *cold* stage, as well as in the *hot;* and that opium does good in both stages.

When the *sweating* stage has arrived, all is going on well, and the paroxysm is nearly at an end; and you then (if the patient chooses) give him warm diluents; and put on more clothes than in the hot stage, because he is gradually cooling. You must not allow a draught to blow upon him; but you may attempt to lessen the duration of the sweating stage (which will sometimes run on for many hours) by diminishing the quantity of clothes, and cooling him gradually. You must be very cautious, however. In the *hot* stage there is no danger, I presume, from tepid ablution; but in the *sweating* stage we must be more on our guard. In this stage narcotics, and every thing that debilitates, would be wrong. Nature is now exhausted, and wants repose; and to lower her still more, must be not only injurious but unnecessary; because health is about to be restored, and things are now nearly at a conclusion. If the patient be exceedingly faint, stimulants may be given; but before we exhibit them, we must take care to observe whether local congestion, or inflammation, may not be present.

The great means, however, for curing the disease, (unless venesection be considered a very important means), are certainly to be employed in the *intermission.* By the term "*intermission,*" we mean the period between the paroxysms; while by "*interval,*" we mean the period of the paroxysm and the period of intermission together. The two chief remedies, in the cure of this disease, are bark and arsenic. Nothing is more instructive, in pointing out the impropriety of hastily deciding against a medicine, than the history of bark. Peruvian bark was first brought from South America in the year 1632; but the mode in which its efficacy was discovered, has not been well ascertained. So highly, however, was it thought of at first, that in the year 1658, sixty florins* were given for twenty doses. It was then made a nostrum of, as all good medicines are; till at length many regular practitioners wrote against it; and such was the prejudice excited, that about thirty years afterwards, several hundred pounds weight of it lay at Piura, unable to find a purchaser. An alderman died, while using it to cure his ague; and it was therefore immediately asserted, that he was killed by it. Oliver Cromwell, who (as I before stated) had an ague, was not allowed to take bark;

* Presuming that the *Spanish* florin is meant, this sum will amount to about thirteen pounds sterling.

and consequently died of the affection. The prejudice against it continued to extend, and great violence was manifested. Sydenham however, though at first opposed to it, gave it boldly; and warmly advocated its employment. Violent medical altercations took place; —far greater than any which now occur; and those who employed it were called "murderers," and were stigmatised as being unfit to practise. Sydenham gave it in larger doses than his cotemporaries; and exhibited it, not during the paroxysm, but in the intermission. Now there can be no doubt that it may do harm during the paroxysm; for it may overload the stomach, and increase congestion, if given in large quantities. Sydenham, therefore, introduced a great improvement, by giving it in the intermission; and he improved its efficacy by giving it in large doses. The efficacy of many medicines is not properly esteemed, in consequence of their not being given in sufficiently large doses. Many persons will exhibit a medicine; and if it does not appear to answer, relinquish it immediately; without determining whether it will really do good or not. Sydenham, by giving larger doses than his cotemporaries, by exhibiting it between the paroxysms, and by gradually increasing the dose, found that it deserved all the praise which had been bestowed upon it.

When it does not cure the disease as rapidly as you wish, it should be given in the largest dose that the patient will bear. A drachm or two drachms every two hours, is frequently necessary to cure the affection. Dr. Gregory used to tell us he was informed by a practitioner, that a friend of his, in the delirium of ague, took from three to four ounces of bark; and not only did no ill effect ensue, but he was cured from that moment. It ought to be given finely powdered; because if it be not, a very small quantity only will come in contact with the stomach and intestines; and its full virtue is not obtained.

Of course you know, that there are three kinds of Peruvian bark; —the yellow, the pale, and the red.* The latter is preferred by many as being the most powerful; but although the most powerful, it is not so well borne by the stomach. Dr. Chapman (of New York), Dr. Sanders, (who practised at Guy's Hospital)†, Dr. Rigby, (of

* Ascribed to Cinchona Cordifolia, Lancifolia, and Oblongifolia, respectively. But although the Pharmacopœias of London, Edinburgh, and Dublin, all agree in this respect, Dr. Duncan observes that there is no satisfactory evidence of their being right;—"on the contrary, it is almost certain that, with regard to some of the species, they are wrong." Some highly instructive observations on this subject, distinguished by all his usual acumen, and never-tiring patience of investigation, will be found in his "Edinburgh New Dispensatory;" pages 372 to 387 (twelfth edition). A very complete account of the different kinds of Cinchona Bark, is given by Mr. Pareira; whose Lectures on Pharmacology, unrivalled for extent and accuracy, will be found in the "London Medical Gazette," volumes xvii to xx. Those who consult the interesting lectures of Dr. Sigmond, published in the "Lancet" for 1836-7 and 1837-8, will see what the graces of a polished style, and illustrations collected from every department of literature, can do for a subject usually considered so dry and unattractive as Materia Medica.

† "Observations on the Superior Efficacy of the Red Peruvian Bark, in the cure of Agues and other Fevers."

Norwich),* and Dr. Skeete,† all wrote on the red bark; and extolled it as being more efficacious than the others. Milk is one of the best vehicles in which bark can be given. Some give the powder in decoction; and some give it as an electuary; and it may be given thoroughly mixed with any syrup or sweet substance, and then diffused in some liquid, so as to be drunk. Sometimes it disagrees with the stomach; and therefore it is necessary to add something to it. Many persons, from pure bark, experience nausea; and perhaps vomiting; while in some, it occasions purging. In all such cases, a few drops of tincture of opium, will frequently enable the stomach and intestines to bear it. If it be only the stomach which is disturbed, an effervescing draught will answer the purpose; and so will prussic acid. A small quantity of prussic acid, given at intervals in the course of the day, will enable the stomach to bear bark, and many other things, very well. But if the intestines be deranged at the same time, opium is probably one of the best things; because neither an effervescing draught, nor prussic acid, will lessen the purging. You may sometimes bring a patient to bear bark by degrees;—giving him small doses, and increasing them. In the case of children, it may be given in the form of clysters; and some persons have been cured, it is said, by its external application;—by having it tied, in fine muslin, or fine linen, on different parts of the body. I recollect hearing Sir Henry Halford say that, when he was a child, he had ague; of which he was cured by wearing a jacket of bark. A double jacket was filled with powdered bark; and put next his skin.

It is now ascertained that the power of Peruvian bark resides in two substances, called *quinine* and *cinchonine;* and of these two the former is chiefly used; and that in the form of sulphate. It is found by chemists, that both these substances abound most in the red bark; and we therefore see how it is that the red bark was supposed, by many, to be the most efficacious of the three kinds. Quinine is said to abound most in the yellow bark,—the cinchona cordifolia; and the cinchonine in the pale bark,—the cinchona lancifolia. I have given the quinine, both simple and in the form of sulphate; and have cured ague with it very well; but I have never employed the chinchonine.

The mode of giving the quinine is usually, as I have just said, in the form of sulphate; and a few grains, every eight hours, will generally cure the complaint. Some give a grain or two, every two hours; and say it answers very well; but others give a larger quantity, at more distant intervals. Either way is very good; but if the stomach reject it, certainly it would be better to give only a grain or two every two hours throughout the twenty-four, rather than a large quantity at once. I have found it the most efficacious mode, to give a large dose immediately after the paroxysm. It is very good to give it *before* the paroxysm; but I think, of the two, more effect is pro-

* "Essay on the Use of the Red Peruvian Bark in the Cure of Intermittents."
† "Experiments and Observations on Quilled and Red Peruvian Bark."

duced by giving it as soon as the paroxysm is over. For the most part, you will put a stop to it directly, if you give ten or twelve grains as soon as the paroxysm is over; but you do not usually *cure* the disease, you only *suspend* it. To effect a cure, you must generally give a larger quantity in the course of the twenty-four hours; and for some time. When we first had sulphate of quinine, I was generally able to cure the disease with two or three grains, two or three times a-day; but that does not generally happen to me now; and therefore I cannot but believe, that this medicine is exceedingly adulterated. I continually have to give people twenty or thirty grains, in the twenty-four hours, before I can cure the complaint.

No general rule can be laid down respecting the quantity required. Some persons may be cured by a few grains; and some will require a very large quantity. In February, 1829, I had a patient labouring under quartan ague, which did not yield to less than forty-five grains, in the twenty-four hours. I thought that a very considerable quantity; but in the ensuing October, on my return from the Continent, I found a patient in my wards who, by direction of Dr. Roots, was taking a scruple every eight hours, together with ten minims of Liquor Arsenicalis.* This man, like the former, had a quartan ague; and was no better, notwithstanding he took this large quantity. However, as it did not disagree with him, and as I never failed in curing the complaint, I determined that if it *could* be cured it *should;* and I gave the remedy (as Dr. Roots would no doubt have done, had he continued to treat the case) every *six* hours, instead of *eight;* and he was then cured directly. That was the largest quantity that I have ever been obliged to give; but it was indispensable in this case. I should certainly advise you to give a large dose (such as twelve or fifteen grains, in some cases; but eight or ten, in general) immediately after the fit, to *suspend* the disease at once; and then to give a small quantity repeated at intervals during the twenty-four hours, for the purpose of *curing* the disease. In the first case you knock it down at once, which is a material point; because every paroxysm shatters the patient, and is a period of great suffering; and therefore I would stop it immediately. But you will not always stop it *permanently*, unless you give a larger quantity in the twenty-four hours; and continue it for some time. I am in the habit of giving ten grains as a medium dose, immediately after the paroxysm; and then five grains every six or eight hours, whether the disease comes back or not. It is necessary to continue the medicine for some time, after the disease appears to be cured; for if it be left off directly, the disease, in all probability, will return. It is just the same in the cure of syphilis; if you leave off mercury as soon as the sore is healed, or the pain has ceased, the symptoms will possibly return. Although ague, therefore, appears to be quite arrested, it is necessary to con-

* In the London Pharmacopœia for 1836, the name of this preparation was changed to "Liquor Potassæ Arsenitis." As we have mentioned the New Pharmacopœia, we may refer to the "Medical Gazette" for April 7, 1838 (vol. xxii. p. 78), for a notice of some errors into which all the translations have fallen.

tinue the remedy for two or three weeks afterwards, in order to make sure of your cure.

The remedy, I know, may be given with perfect safety even during the paroxysm, when the pyrexia is all present; and even though there may be local inflammation; but I should conceive that it is a waste of a good thing, to give it during the paroxysm. At that period the system is in such an unnatural state, that all agents are resisted; and a dose of quinine, that produces a good effect during the intermission, will produce no effect during the paroxysm. Medicines are all resisted, more or less, when we are in an unnatural state. It is found to be more efficacious during the intermission; and sufficient may then be given to cure the disease. I do not know that it is *injurious* to give it during the paroxysm; but it is certainly *wasteful.*

I have frequently had occasion to give it, notwithstanding there was local inflammation. My object was to cure both diseases; and while I was curing the local affection by bleeding and other means, I stopped the ague with the quinine; and never saw any harm done by it. When I first employed this remedy, many years ago, I had a patient with ague, who shivered every other day; and had then intense heat and sweating; but during the intermission he was always hot; always had a very quick pulse; and was always thirsty. He had continued fever, with the addition of a tertian ague; or he would have been said by some to have remittent fever. I did not then know a great deal about the remedy; but I gave it him at regular hours, day and night, and he became perfectly cured. Notwithstanding the great feverishness, no inconvenience arose. The case is published in the twelfth volume of the "Medico-Chirurgical Transactions," along with several others of which I made a report to the profession, before the remedy was much known in this country. I have continually seen quinine cure the disease, when bark was given in as large a quantity as could be borne; and likewise arsenic; and both had failed. I have also known it stop vomiting. When a person with ague has been exceedingly troubled with vomiting, with great irritability of stomach, I have known it put a stop to the irritability as well as to the ague. Still it is to be remembered that, now and then, it disagrees with the stomach. Now and then it produces vomiting and gastrodynia;—just as bark will do; and, more frequently still, it will also purge. When you find the stomach is disordered by it,—whether it be thrown into spasmodic pain, or vomiting is occasioned,—you may give aromatics, or opium, or (what is far the best) prussic acid. If there be mere pain, an effervescing draught will not be of any use; though it might be serviceable if there were nausea and vomiting.

In one respect it is best given in a fluid state; and there should be a slight addition of sulphuric acid; by means of which you make a super-sulphate. Sulphate of quinine is not very soluble; but by adding one drop of sulphuric acid to every grain of sulphate of quinine, you have a super-sulphate, which is sufficiently soluble. It

goes farther, I should imagine, when given in this form; but on account of its taste, and for the comfort of the patient, we often give it in a solid form. If it be exhibited in a pill, its bitterness is not tasted.

The power of quinine is one of the most extraordinary facts in medicine; and always reminds me of the lines in Virgil,—

"Hæc certamina tanta,
Pulveris exigui jactu, compressa quiescunt."

It is said to have failed sometimes; and that bark has then cured the affection; just as, in many cases, I have seen it *successful*, when bark had *failed*. I imagine that when this has happened, it has been from its disagreeing with the stomach; so that a sufficient quantity could not be taken. Cases have occurred to me, in which the stomach became so irritated, from the intensity of the medicine, that the patient rejected it; and could not take it in sufficient quantity; whereas bark, being far less intense, could be borne; and was taken in such a quantity as cured the disease. I had a case exactly of this description, in the lady who caught an ague from walking on the ramparts of the Tower. A very small dose of sulphate of quinine produced most excruciating pain at the stomach; and she could not persevere with the medicine. Bark was substituted for it; was borne very well; and cured the disease. Whether if she had taken tincture of opium, or prussic acid, in proper quantity, it could then have been borne, I do not know; but I think it probable that it might; and that it would then have cured her. I think Andral mentions the circumstance of quinine having failed, and of bark subsequently curing the disease. I do not know the particulars of his cases; but I imagine that such a circumstance as this, could only arise from the medicine irritating the stomach, so that it was not taken in a sufficienly large quantity; because it has all the virtue of the bark, and in far greater intensity.

Many other barks, however, cure the disease. The bark of willow, the alcaloid principle of the willow-bark (salacina), swietenia, all astringents of the vegetable kingdom, and more especially a combination of both, (such as columbo with galls), will cure the affection. A combination of these, is found to be more powerful than either of them taken separately; and those barks which contain both a natural bitter and an astringent, are those which answer best. It is said with respect to these, that they have sometimes cured the disease, after Peruvian bark has failed; and various other combinations of bitters and astringents, have done the same. Piperine will cure ague.

Next to sulphate of quinine or bark, however, certainly comes arsenic. The solution of arsenite of potassa, is what is commonly used; in doses of from two to ten, or twelve drops, or more, two or three times a day. It is best to give this remedy in a very gradual mode; and I never begin with more than two or three drops, three times a day;—gradually increasing it. It is always best not to give

this medicine on an empty stomach. When you are giving an acrid matter,—such as iodine, the oxymuriate of mercury, or antimony,—with a view, not to nauseate, but merely to produce diaphoresis, you find it by far the best practice to exhibit it after food has been taken. It is evident that any thing acrid, coming into direct contact with the mucous membrane of the stomach, is more likely to irritate it, than if food had been first taken, as to cause it to be so applied to the stomach partially and gradually. Whenever Peruvian bark or sulphate of quinine, irritates the stomach, it is best to try whether it will not be borne when given after meals. But in the case of arsenic, you should make it a rule never to give it before breakfast. Persons are continually nauseated, and will even vomit if they take it before breakfast; whereas, *after* breakfast they may bear it very well. When it produces nausea or vomiting, a little tincture of opium is indispensable; indeed it is well, in general, to combine a little tincture of opium with every dose of arsenic.

The ill effects of arsenic are symptoms of gastritis. The slightest symptom is nausea; the next is vomiting; then pain of the stomach, and heat there; tenderness on pressure; and heat extending up the throat. Arsenic has a tendency to excite gastritis, even when not taken into the stomach. I knew an instance of a person being seized with gastritis, and thrown into the greatest danger, simply from having arsenic applied to a sore of the leg. One of the first effects of arsenic, is to irritate the stomach; and the irritation soon arises to the pitch of inflammation; but it will also produce other effects. Singularly enough, it occasions soreness and redness of the tarsi; redness and heat of the fingers; soreness of the throat; and œdema of some part of the body. Very frequently, when patients have been taking arsenic, I have seen the face swell; and sometimes the lower extremities. Sometimes it is one part, and sometimes another; but more frequently it is the face. Frequently, too, there is heat of the system. When this local inflammation of the stomach, throat, or face, takes place, the whole body will become more or less excited; so that you have general pyrexia. In this case, it is necessary to omit the medicine immediately;—not to lower the dose, but to omit the medicine altogether; and then you generally see the symptoms decline; though it may be necessary to apply leeches freely at the pit of the stomach, or to bleed. I never, but once, saw any harm ensue; and in that case the remedy had been carried on very injudiciously. If, while you are giving arsenic, you look carefully at the patient's face, and ask about his throat, and also respecting the state of the stomach,—as to whether there is pain, tenderness, nausea, heat, or vomiting,—I believe no harm can arise.

Arsenic will sometimes cure the disease immediately. I have seen ague cease from the first day it was given, although the disease had continued for a length of time; but frequently a longer period is required, for its successful exhibition. The largest dose required, I believe, is from twelve to fifteen drops, three times a-day; or as frequently as is necessary. I never had occasion to go beyond that;

nor should I like to do so. I need not say that, on account of its virtues in this disease, it has been made a nostrum of;—exactly as was the case with bark. What is called "Tasteless Ague-Drop," is a preparation of arsenic.

It is asserted, but I cannot say from experience whether it is correct, that when Liquor Arsenicalis has failed, pure arsenic has succeeded;—that is to say, what is called arsenic in commerce, has succeeded; when its combination with potassa, according to the directions in the Pharmacopœia, has failed. It is said that about the sixteenth of a grain may be given, three or four times a-day; that the eighth of a grain can seldom be borne; but that the sixteenth of a grain succeeds very well. You will find this stated by Dr. Macculloch, in his second volume on "Marsh Fever;" but I never exhibited it. Many other minerals, which are astringents, will cure cases of this disease; sulphate of zinc, oxide of zinc, sulphate of copper and alum. Muriate of ammonia is likewise said to have a power over the disease; and it is thought by many, at least abroad, that it heightens the power of bark. Carbonate of potass is supposed to possess some virtue. A combination of some of these things is thought to be best; but no doubt sulphate of zinc, and sulphate of copper, will frequently cure the disease.

As a full dose of sulphate of quinine, or a full dose of bark, is found more useful immediately before the paroxysm, than at other periods of intermission, (except immediately after it is over), so various other remedies have been employed at this period. These have been of various kinds;—sometimes medicinal; and sometimes calculated only to make an impression on the mind. Immediately before the beginning of a paroxysm, a large dose of opium has sometimes prevented it from coming on violently. Sudorifics and emetics have been employed for the same purpose. Mental emotion has been excited at the moment with a similar view; so that a child has been flogged out of his ague, or frightened out of it by threats. He has been threatened with a good thrashing, if his ague came on; and there can be no doubt that this has cured his complaint. Sometimes by exciting disgust,—by insisting that a person should swallow spiders and cobwebs, the paroxysm has been prevented. Some persons, however, imagine that the latter really possess a power in preventing the disease. I have no personal knowledge of the virtue of spiders and cobwebs; but you will find in Dr. Chapman's work on Materia Medica,* a very strong testimony in favour of the soothing effects of cobweb. He mentions that it will procure sleep in fever, and tranquillize the system, when all other things have failed. I know that many persons declare that it has a sort of sedative quality; and there is no reason why it should not; but in the cure of ague, it has been employed merely with a view of exciting disgust; and has succeeded. These effects might be produced at any time during the intermission; but it is immediately before the

* "Elements of Materia Medica, and Therapeutics; by Dr. Chapman;" Philadelphia, 1831.

paroxysm that disgust, or fright, or violent emotion of mind, is most likely to be of use.

The great remedies for the disease, however, are quinine and arsenic; all other means being more or less uncertain, except perhaps salacine. I never think now of employing anything but quinine; though, in particular circumstances, I might be induced to order venesection. These two medicines, quinine and arsenic, are also equally good in other complaints of an intermittent, though not aguish, character. In intermittent rheumatism and neuralgia, they are among the best remedies. It is a singular circumstance; but even in intermittent vomiting, arsenic has been known to effect a cure. In the last volume but one of the "Transactions of the London Medical Society," you will find a paper by Dr. Adams, on periodical vomiting, coming on at certain intervals; which was cured by what would, in many cases, have *produced* vomiting;—a small quantity of arsenic. Whenever complaints assume an intermittent form, whether they be aguish or not, you will find that the sulphate of quinine and arsenic, are among the best remedies. If either of these failed separately, I should not hesitate to give them both together. I have failed with arsenic, but not with quinine. Whenever a case was obstinate, I increased the dose to the largest quantity the stomach would bear.

It was formerly imagined that ague was too good a thing to be cured;—that it was very wrong to stop it. At any rate, many contended that it ought not to be stopped, till the patient had gone through a certain preparation. I know that I have astonished many persons (who, when abroad, were accustomed to see some preparation employed before the remedies for ague were given) by stopping the disease immediately. I never saw any harm done by it; though if there be any local affection of the head, chest, or abdomen, you must take care to attend to that at the same time. If there be any congestion of the head, lungs, or abdomen, it may be necessary to bleed, to purge, and to use all the remedies for such a state as this; for if you do not, it is possible that the circumstance of stopping the ague at once, may be useless. If you do every thing indicated by the local affection, I am quite satisfied there will be no danger in stopping the ague. I never did harm by it in a single case. I never lost a patient from ague; notwithstanding that I gave sulphate of quinine when local inflammation was present. Arsenic, I need not say, may be very improper when the inflammation which is present affects the stomach; and in the case of gastritis, possibly neither arsenic nor quinine can be borne; and you do not remedy the morbid condition, till you adopt either local or general bleeding.

So far from the stoppage of the ague doing any harm, I have found any local disease that might be present, removed the more easily; for every attack of ague of course disturbs the circulation, renders it more irregular, and is likely to throw a greater load of blood upon those organs which are already in a state of congestion. At any rate, ague always makes bad worse. I have always con-

sidered that I have treated local complaints more successfully, by having stopped the ague. Sydenham says,—"cure the ague first; and then you will easily cure the dropsy, which otherwise might be impossible." I never saw any chronic complaints ensue, on stopping ague. I believe they do not arise from the ague itself; but are, like ague itself, the result of malaria; and I know that, for many of them, one of the best remedies is sulphate of quinine, bark, or arsenic. I have seen many cases of dropsy vanish, on the exhibition of sulphate of quinine, without any thing being conjoined with it. If you stop the ague, you will find all those effects which are ascribed to it, cured more safely, whether they be acute or chronic. Still it is possible that ague sometimes may not give way, till you have remedied the local mischief. It is said that, now and then, ague will not yield to any thing, till you make use of local bleeding. You will find many say they have met with cases, where bark would not cure the disease, till they made the patient's mouth sore. I never met with a case of that description; but still it is so asserted; and it is right that you should know it. If what is said be correct, such a practice must be adopted; but I should nevertheless, in such a case, go on with the quinine, while I was giving the mercury, or making use of local means.

With regard to the *prevention* of ague, the great point is to drain the country; and to prevent all accumulations of dead vegetable substance; in order to prevent, as much as possible, exhalations from putrefied vegetable matter. When land cannot be drained, occasional inundations may be necessary; in order to throw more water upon it, than is compatible with vegetable decomposition. With regard to individuals who must be exposed to ague, the best mode of preventing it is to live as well as possible; to have good food; a certain portion of wine or beer; and never to expose themselves to malaria with empty stomachs. Persons so situated, ought always to take something before they go out of doors; and where malaria is very intense, spirits may be found necessary. Smoking is an excellent preventive, in damp places. I mentioned that when Napoleon was in Italy, he found the advantage of keeping up good fires, in preventing disease. When persons are obliged to live in a house where there is malaria around, it is best to sleep as high as possible;—rather to condescend to sleep in a garret, than to aspire at sleeping in the best apartments; and it is of great importance to avoid going out at night, or very early in the morning. It is said that a gauze veil around the head, when persons must be exposed, is likewise of use. It might be highly beneficial for a person exposed to malaria, to take sulphate of quinine.

CONTINUED FEVER.

In continued fever, the general symptoms are the same as those I described, as the constitutional symptoms usually accompanying local inflammation. The same symptoms which occur constitutionally, in

any intense local inflammation, are those which, generally speaking, characterize continued fever. There is quickness of pulse, increased heat, and diminution of the secretions. From the latter circumstance we have thirst, dryness of the skin, scanty and high-coloured urine, and costiveness. There is usually restlessness and watchfulness. At first, as at the beginning of inflammation, and as in intermittent fever, there are the opposite symptoms of chilliness (even amounting to rigors), coldness, paleness, and smallness of the pulse; but these, in general, last only for a time. Andral, according to some observations which he made at Paris, in 1822, on two hundred and twenty-nine cases of fever, says that chilliness rarely occurs on the first two or three days. However, I have been attentive to this circumstance; and I know that people in London, at the very *beginning* of continued fever, do frequently complain,—more frequently than not,—of chilliness; and of those symptoms which are analogous to the first stage of intermittent fever. If, however, these symptoms do take place,—rigors, chilliness, and smallness of the pulse,—they usually last but for a short time. They soon yield to symptoms of excitement; and these symptoms continue throughout the disease; though perhaps, after a time, they are united with symptoms of great debility;—just as is frequently the case in inflammation.

The general symptoms of continued fever vary, from those which characterize an *active* inflammation, down to those which accompany an *atonic* or a *passive* inflammation, or even those which denote mortification; so that you have symptoms of activity and strength, and all the intermediate shades and degrees, down to symptoms of extreme prostration of strength; and even a disposition to putrescency in the fluids of the body.

In an attack of fever, there is, from the first, more affection of the head, than when the constitutional symptoms of mere inflammation occur. There is generally at first more or less confusion, giddiness, and drowsiness; perhaps even stupor, or watchfulness. There is generally, from the first, pain of the loins; with a complete loss of appetite, and a general sense of debility. The countenance, too, in fever, is almost always expressive of heaviness and anxiety. The countenance of continued fever, is exceedingly characteristic; the patient is both very heavy in his look, and is evidently, at the same time, labouring under a degree of uneasiness. Sometimes, in these circumstances, the face is pale; but still there is the heaviness and the anxiety. Sometimes the face is flushed, and the eyes look red; and there is frequently great heat of the head. The vessels feel to the patient to throb; and they feel so likewise to the medical attendant. There is then great pain usually felt in the forehead. The tongue is generally tremulous; whatever may be its appearance as to dryness or colour. The extreme feeling of weakness, and the aching of the loins, in the beginning of this disease, are no less characteristic than the countenance.

When those symptoms, which I have now mentioned, occur quickly and acutely, they show the existence of continued fever; more espe-

cially the morbid appearance of the tongue, the heat, the quick pulse, and the thirst, be out of all proportion to any signs of local inflammation that may exist. In these circumstances we consider that the patient has *fever*, in the proper sense of the word;—*idiopathic* fever;—fever as distinguished from mere pyrexia. Local inflammation frequently exists at the same time; but whether there is *always* local inflammation present or not, is a theoretical question upon which I will not now enter. These symptoms, however, very frequently occur without any *evidence* of local inflammation; and are as frequently out of proportion to any that we may observe; and it is this circumstance that makes us consider the person as labouring under *fever*, properly so called.

As to the particular symptoms to which I have just now alluded, the heat is sometimes intense. The temperature of the body will sometimes rise to 104°, 108°, or 110°; and sometimes it is of that peculiar character which authors have denominated *mordant;*—a pungent, or biting heat. Galen, Sir J. Pringle, and Sir G. Blane, all speak of "mordant heat." Galen, when treating of autumnal remittent fever, says, that the great mark of it is the mordacity and acrimony of the heat; which erodes the touch, just as smoke does the nose and eyes:—"Maximum indicium est mordacitas et acrimonia caloris; quæ, perinde ac fumus nares et oculos, sic ipsa erodere tactum videtur." This peculiarity of heat is not felt, he says, the moment the hand is applied; but is perceived on continuing the hand upon the patient for a certain time. Sir Gilbert says that, in ship-fever, there is a peculiar heat of the skin;—a glow of heat imposed upon the palm of the hand of the practitioner, who has grasped the wrist of the patient; and which lasts some hours, if the hand be not washed sooner. He adds that he never saw this in the sporadic fevers of England; though he has been informed of its occurrence. Andral also mentions the same circumstance. He says that, in the continued fever of Paris, the heat of the skin was in one case very high, acrid, and mordant;—leaving a sense of heat for some time upon the hand of the practitioner;—a sensation, he says, very nearly allied to pain:—"La chaleur de la peau étoit devenue très elevée, acre, et mordicante. En laissant quelque tems le doigt en contact avec elle, on eprouvoit une sorte de sensation penible, voisine de la douleur." Sometimes, however, the heat is not increased in fever; or if it be increased, it is only partially; and it varies in degree at different times. Occasionally, the temperature in fever is below what it ought to be; and in the last stage, you have sometimes absolute coldness.

The pulse, like the temperature, is generally increased. The pulse in continued fever may be full or hard, soft, small, or weak. Like the temperature, it may be of all degrees. As the temperature may be from 110°, down to far below the natural standard, so the pulse may be quick, full, hard, and strong; or it may be more or less slow. It may be so feeble, as to be easily extinguished;—to be what is called a fluttering, or a vermicular pulse. It varies in this way, according

to the tonic or atonic character of the disease; and according to the stage of the affection. In examining the pulse, if there be signs of debility, and the pulse be strong, we ought to examine the actual state of the circulation at the heart itself. We ought, if we be in any doubt, to resort to that method; for occasionally there may be the extreme debility of fever, with rather a strong pulse. The heart may be in a state of disease, which you may not be aware of; in consequence of not having seen the patient before his present illness. The heart may be greatly thickened; and although it may be acting less forcibly than it did before the attack of fever; yet it may act from its thickness so as to produce a full pulse; such a pulse as might incline you to adopt active measures.

I have brought with me a curious specimen of diseased spleen, and diseased heart; shewing intense ossification. Here is the spleen, with the peritoneal coat exceedingly thickened;—so thickened that it has become absolutely white. It is not only thickened, so as to have become almost cartilaginous; but there is a rare occurrence within. The blood-vessels, I presume the arteries, are ossified. On passing your fingers over any of these you will find that the coats of the vessels are bony. The tendency to ossification was so great in this case, that not only the vessels of the spleen, but likewise the coronary vessels of the heart, have fallen into a state of induration aud ossification. The patient from whom this was taken, had no symptoms of angina pectoris; which are said to take place when the coronary arteries are ossified. There is another curious circumstance. Ulceration has taken place in the peritoneal coat of the spleen, which is rather a rare thing; though sometimes you will see ulceration beginning in a serous membrane, and going inwards. In general, ulceration proceeds outwards, (as is the case in ulceration of the intestines), till at last the peritoneal coat is ulcerated; but here the external coat of the spleen is alone ulcerated;—there being no ulceration beneath it.

The quickness of the pulse in fever may amount to about 200. Of course you cannot count such a pulse as this at the wrist; but you may count it, with perfect ease, at the heart itself. The usual range, however, of the pulse, in continued fever, is from 90 to 160. Occasionally it is not quick;—just as the heat occasionally is not increased; nay, it is sometimes even slower than it should be. This takes place chiefly when the head is very much oppressed. It occurs sporadically from the state of the head, or from some peculiarity in the individual's constitution. It has, however, occurred epidemically. Fevers have occurred epidemically, in which one of the characters was slowness of pulse. De Haen mentions a sporadical case of very severe fever, in which the pulse was only 44. Sarconi, in his account of an epidemic which prevailed at Naples, states that the pulse was hardly more than 40 in a minute, in some cases.

Occasionally in fever the pulse is regular; while in health it is intermittent. Many such instances are upon record. Andral mentions a case of fatal fever, where the pulse at first was intermittent;

but as the symptoms grew worse and worse, the pulse became more and more regular; till at last it was perfectly so. Rasori, the celebrated Italian physician, mentions the case of an individual, in whom the pulse was regular till the fever was over; and then it became intermittent. He therefore inferred that his pulse, in health, was naturally intermittent. De Haen also mentions the case of a man, who had an intermittent pulse at all times, except when he was labouring under fever. Monro and Shenkius mention such cases; and Dr. Heberden himself saw two persons, whose pulse was always intermittent, except during illness. I may mention that Dr. Heberden knew a female, who had intermittent pulse all her life; and who at last died of cancer of the womb; but in whose circulating system, an able anatomist could discover nothing unhealthy.

The skin in fever is usually dry; but as a favourable change takes place, it becomes more soft; and the moisture is for the most part general. Sometimes, however, in fever there are partial sweats, which are by no means favourable; and when death is near at hand, then the sweats are generally both cold and clammy. Sometimes the sweats are offensive; especially if there be great debility. Upon the skin are not unfrequently seen spots;—discolourations of various sizes. If they be exceedingly small, they are called *petechiæ;* if larger, they are termed *vibices;* if still larger, they are denominated *ecchymoses.* These spots are of various shades; from a tolerably bright redness, down to a purple hue. They occur particularly in the last stage of the disease, where there is extreme debility; but sometimes they occur where there is *not* great debility. At particular periods, continued fever is characterized by them; and I have seen a greater number of instances of this description, within the last three months, than I ever saw before in the whole of my life.

The tongue is usually dry in fever. With respect to colour, it may be white, or yellow, and loaded; it may be of a whitish brown, or really brown; or it may be absolutely black. Occasionally it is brown down the middle; and has a broad white band on each side; the edges, perhaps, being red. You will sometimes see it of a reddish brown. Occasionally it is red, glazed, smooth, and dry; and not unfrequently in these circumstances, it is cracked also. It is very common to see it more or less white or brown on the back; with redness at the tip, or redness at the edges. Occasionally it is extremely pale. When the tongue is of a reddish brown, or really brown, or absolutely black, you have usually likewise collections of black matter about the teeth and lips;—*sordes,* as they are called. They are the result, no doubt, of vitiated secretion; and sometimes they are partly the result of a little effusion of blood, which coagulates, and uniting with the secretion, contributes to their formation. The tongue, you will remember, is generally tremulous; and frequently the extremities are in a similar state;—so that, when the patient attempts to move, his hands or his legs tremble; but even when they do not, you may generally observe a tremor of the tongue. From the dryness of the tongue, and perhaps of the fauces,

the patient necessarily suffers thirst. The breath is frequently offensive;—much more so than the perspiration.

The urine is scanty and high-coloured; containing an excess of the lithates, and the purpurates;—chiefly the purpurate of ammonia, but also the purpurate of soda; together with the yellow colouring matter, which naturally exists in the urine. As the fever declines, the lithates become super-lithates, and are precipitated; so that you have a red sediment. The urine has a strong animal smell; and not unfrequently it has a strong ammoniacal smell; and almost as soon as it is discharged, it rushes into a state of putrefaction. Occasionally the urine is very dark coloured; and sometimes it is bloody.

With respect to the stomach, the appetite, for the most part, is lost; but just as there are extraordinary instances, from time to time, with regard to the pulse (such as its being regular in fever, while it is intermittent in health) so, with respect to the appetite, there are cases upon record in which, so far from its being lost in fever, it was much increased. You will find a case mentioned by Dr. Satterly, in the fifth volume of the "Transactions of the College of Physicians," of a boy who laboured under typhus fever, attended by marked inflammation of the head. The exacerbations of the fever were always attended by a voracious appetite; so that, in the midst of the fever, he would eat four meals a-day, and each meal would have been sufficient for a stout labourer. Besides these four meals of meat and vegetables, he daily ate many pounds of dry bread, biscuit, and fruit. He had no sooner eaten a meal, than he denied that he had eaten any thing; so the more he ate the more he desired:—

"Cibus omnis, in illo,
Causa cibi est; semperque locus fit inanis edendo."

If he was not fed the moment he requested it, he sucked the bedclothes and bit his fingers; in this also bringing to one's mind Ovid's account of Erisichthon:—

"Ipse suos artus lacero divellere morsu
Cœpit, et infelix minuendo corpus alebat."

This boy discharged several very copious stools a-day; and he recovered perfectly. The appetite, however, usually returns as the disease declines; and when the disease is first gone, the appetite is for the most part voracious. Persons say there is nothing the matter with them; but that they are hungry. The stomach, however, is frequently much more affected than with mere loss of appetite. Even from the very first there is nausea; and, in many cases vomiting. Sometimes the vomiting does not occur from the beginning;—does not make its appearance, till the disease has existed for a length of time. The stuff which is vomited may be mere mucus; or it may be bile; or it may be like coffee-grounds; and sometimes the quantity is very considerable.

The intestines likewise suffer in this disease. There is often more

or less costiveness; but very often there is diarrhœa. Sometimes the diarrhœa begins with the disease; and sometimes it will not come on, till the latter has existed for a certain period. The character of the stools is as various, as the character of the matters vomited. They may be very watery; or they may be mucous, or (as the common people say) slimy. They may be, in colour, yellow, greenish, or white. They may be exceedingly offensive; and perhaps bloody.

The functions of the brain are almost always affected. Pain, vertigo, and tinnitus aurium, are very common; and sometimes there are convulsions, dullness, or stupor; there is usually great depression of spirits; and there may be delirium at night, terrific dreams, and watchfulness. It is said, with regard to respiration, that more oxygen is consumed in the hot stage of fever (as well as during digestion and exercise) than in health; and that more carbonic acid is formed; whereas, in the cold stage (as indeed after bleeding, and in dyspœa) less oxygen is consumed, and less carbonic acid formed.

Now the disease, such as I have described it, may have all the symptoms of mere excitement, with no remarkable debility. There is always a feeling of more or less debility; but there may be sometimes *chiefly* excitement; and only that debility which is inseparable from fever. The fever may be subdued; the morbid changes, which I have mentioned to occur in the secretions and functions, may decline; and nothing but weakness and a degree of emaciation may remain; and recovery from these may speedily take place. The emaciation, I may observe, is proportionately greater after fever, than after any other acute disease. However, this may not be the progress of the case. Signs of debility may appear; the breath may become very fœtid; as may also the perspiration, and all the discharges;—whether from the stomach, the intestines, or the urinary bladder. What is vomited may be like coffee-grounds; the urine may be bloody; and so may the fæces. Even blood may be found in the mouth; or may be poured forth under the skin. There may be extreme blackness of the tongue; and a great quantity of sordes upon the teeth, lips, and every part of the mouth. All the fluids may be secreted in so vitiated a manner, that they may putrefy as soon as they are discharged; and the body may become putrid directly after death. One cannot conceive the possibility of putrefaction of parts still alive; or of the secretions at the moment of their formation; but they are often as near putridity as is compatible with life. The secretions putrefy, the moment they are separated from the body; and the body itself, as soon as it is dead, will frequently rush into great putridity. The discharges are sometimes so offensive, that perhaps the very house is intolerable. In these circumstances, the pulse is very rapid and very weak; there is extreme prostration of strength; and a death-like faintness is complained of by the patient. The face becomes ghastly;—in fact, you have the *facies hippocratica*. The intellect is greatly disturbed; there is an

inability to attend to any thing; a troublesome hiccup; catching and working of the fingers (called *subsultus tendinum*); perhaps convulsions; at any rate, cold clammy sweats; and an involuntary discharge of the urine and fæces. Still, the debility, and putrescency may decline; and a high degree of these symptoms be recovered from.

If the symptoms be purely inflammatory,—purely those of excitement, with good strength at first, and do not afterwards degenerate into debility, or at least not into *considerable* debility, the disease is called *synocha*. If they degenerate into great debility, it is called *synochus*. If, from the very first, great symptoms of debility appear, it has been called *typhus*. These are arbitrary names;—the two first having the same etymology; but they do very well to express different characters of the same disease, in different individuals. When it is called *typhus*, it is the same fever as many authors write of under the name *ship*-fever, *hospital*-fever, *gaol*-fever, *putrid*-fever, or *adynamic* fever. If the symptoms be very severe indeed, then it is called "typhus gravior;" but if they be mild, though it even prove fatal, it is then called "typhus mitior;"—typhus being divided into two varieties. There is every variety in continued fever; both as to the degree of excitement and the degree of strength;—from the very highest excitement, and a high degree of strength, down to the most absolute prostration that can be present; and from no putrescency, up to a high degree of it.

The parts most dangerously disturbed in fever, are the head, the chest, and the abdomen. The relative proportion of disturbance, in these different regions, is exceedingly various; but the head and abdomen suffer most of the three; except where there is a particular epidemic character; or an individual predisposition to, or a local cause of, excitement in the chest. With these exceptions, the head and the abdomen suffer far more, in continued fever, than the thorax. It is in hot climates, and in hot seasons, that the abdomen is most affected. The local disturbance, when very great, is usually of an inflammatory kind;—at least it is usually inflammatory at first. But as there are all degrees of the general affection, from tonic to atonic, so the local affections may be of all degrees of violence; varying from active tonic inflammation, down to mere irritation, or extreme loss of power.

To begin with the *head*. The local affection there, when very great, may give rise (as I have said before) to drowsiness, headache, convulsions, vertigo, watchfulness, and tinnitus aurium. But it may amount to a higher degree than this; so that you have violent headache,—such as distracts the patient; violent throbbing, which is visible when you look at the temples; intolerance of light; redness of the eyes; and violent delirium. The delirium may be constant; and it may be such as to require corporeal restraint. There may be loud, incessant, incorent ravings; and ignorance of persons and things, which before were perfectly familiar to the individual; and yet, in the midst of this, a person may be rational and sensible for

a single moment;—he may be momentarily recalled by some circumstance, but is instantly off again. At the same time, there is a picking of the bed-clothes, and tremor. Delirium of this description, is called *delirium ferox*. On the other hand, the delirium is sometimes not of this ferocious character. The patient mutters to himself; there are altogether slighter symptoms of disturbance of the head; and it is then called *delirium mite*. Occasionally, where there is great debility, there are no symptoms of vascular excitement in the head;—no headache, no intolerance of light, no redness of the eyes, or throbbing of the temples; but merely muttering delirium. Sometimes there is great stupor, and a comatose state; with or without symptoms of an inflammatory disposition in the head.

As to the *stomach*, there is almost always anorexia, vomiting, purging, or costiveness; but these symptoms are sometimes extreme. There may be copious and intense vomiting of every thing that is taken, and of fluids of all descriptions. There may be violent diarhœa,—of all kinds of characters. The abdomen may be excessively tender to the touch, and painful on the slightest pressure. It may be exceedingly distended; and may be especially painful at the epigastrium, or in the hepatic region. There may be a sense of burning in the abdomen, more particularly at the epigastrium; it may be felt likewise up the throat, and be attended by extreme thirst. When the symptoms in the abdomen run high, they are extreme vomiting, extreme purging, extreme tenderness, and perhaps violent pain, even when compression is not employed.

The state of the *tongue* has been supposed to correspond with that of the alimentary canal. When the internal coat of the stomach is inflamed, the tongue is certainly often, perhaps generally, red; either throughout, at the edges, or at the tip; but the agreement in the two organs is not constant. The tongue may be red in fever, and in other diseases, without any corresponding state of the stomach;—at least, without any *evidence* of it; and therefore the alleged universal correspondence is a mere assumption. A blackness of the tongue is rather indicative of the general debility of fever, than of a gastric affection. Thirst may be commensurate with a gastric affection; but it may arise simply from the intensity of fever drying the fauces. Again, ulceration and inflammation of the stomach or intestines have been found, where the tongue had not been red during life; and it is said that sometimes neither they, nor any abdominal inflammation, could be discovered, where there had been much pain of the abdomen experienced on pressure. Purging may be very violent without inflammation of the mucous membrane; which may be found healthy in consistence, and even pale; just as we have profuse sweating in various circumstances, without any inflammation of the skin. It is not a necessary circumstance that the tongue should indicate the state of the stomach or the intestines. There is a certain correspondence between them; but it is by no means invariable. Neither is it a necessary consequence that, when we see great irritation of the stomach, and great irritation of the intestines, there should be in-

flammation. Frequently, after such circumstances have occurred, inspections have not shown that inflammation existed.

As to the *chest*, it is commonly a little affected. In general, we have the breathing more or less quickened; and there is a little cough; and generally, if you employ the ear, or the stethoscope, you will find in fever some degree of sonorous, or sibilous, or mucous rattle in the lungs. The symptoms may not be such as to attract the attention of the patient, or the practitioner, or to demand any measures; but if you listen with the stethoscope, I believe you will generally find the mucous membrane of the bronchia more or less affected, in this disease. Sometimes, however, the respiration is very *much* affected. It becomes very rapid; and there is violent cough; pain in the side, or at the front of the chest; great rattle; copious expectoration; and all the decided signs of bronchitic, pleuritic, or peripneumonic affection; so that, at last, there is blueness of the lips and cheek, from congestion of the lungs. I believe that all along, there is more *congestion* in the lungs than actual *inflammation*. The affection of the chest, though it generally exists, is far less frequently of an inflammatory nature, than the affection either of the head, or the abdomen; and, of these two, the abdomen suffers most.

If we examine the *blood*, we may find it buffed, and perhaps cupped; but frequently it is quite natural. Sometimes the coagulum is exceedingly loose,—corresponding with the debility; and frequently it soon putrefies. In the typhoid stage of exhaustion and debility, it has been found lately that the chemical characters of the blood are very depraved;—that it abounds more and more in serum, and less in its other constituents. As the disease is more and more characterized by debility, the blood at last resembles mere fibrin and serum. Little or no chyle is formed; and the blood is deficient in carbonic acid, and in saline materials. Dr. Clanny, of Sunderland, pointed out this circumstance; and Dr. Stevens made similar observations. He made them in a distant country, without knowing what Dr. Clanny had done; so that we have the unbiassed observations of two physicians, unknown to each other.

Besides those particular parts that I have now mentioned, others are sometimes very much affected. Sometimes the eyes will become inflamed; and sometimes the throat, bladder, or skin. Sometimes we have an eruption of minute vesicles, of the size of millet seeds; sometimes we have large patches of inflammation; sometimes we have irregular pimples,—papulæ. Occasionally we have a great discharge of blood from the intestines, and urinary passages; and perhaps all this without any correspondent severity of the general symptoms. Sometimes we have inflammation of the parotid glands, ending in abscess. Occasionally abscesses will form in different parts; and sometimes a great crop of boils will appear. Now and then mortification of some part occurs; not general mortification within the head, chest, or abdomen, (the parts which are affected with *inflammation* in these cases); but mortification of the extremities, or of the loins. The debility is such, in this disease, that

from a patient lying long on his back, the loins are much disposed to mortify; and so may one or both hips. There being universal debility, the effect of pressure is not resisted, as it is when we are in health. If we lie upon a part, for any length of time, in health, it will not produce mortification; whereas persons in the debility occasioned by fever, from lying on their back, will soon have the circulation sufficiently impeded by the pressure, to cause mortification. After fever, the mind will sometimes remain dull, or even imbecile, for a length of time;—sometimes for several months; and sometimes there is a great depression of spirits, which the patient, although in other respects pretty well, cannot shake off. Sometimes after fever, a hand or a foot, or both hands and both feet, or a whole extremity, will remain for a longer or shorter time bent, and little influenced by volition; so that, indeed, a person is perhaps a cripple for life. I have seen several persons, whose hands or feet have been bent up in this way, after fever; and where this state ceased after a time; but I have seen others, in whom this state of parts had continued many years after fever, and continues still.

The duration of the disease, whether active and inflammatory, or of great debility and even putrescency, may exist from one or a few days, to several weeks; but it rarely extends beyond eight or ten weeks. Occasionally the disease will end with a discharge of blood, either from the nose, the intestines, or other parts; or with purging or sweating. Dr. Gregory said that he once knew a fever terminate by a great discharge of healthy urine. Andral says that he once saw a fever terminate with a profuse expectoration; and once with an alternation of sweating and expectoration. Suppuration after the disease, a general crop of petechiæ, and even the emaciation which follows the disease, you will find mentioned in authors as happy terminations; as critical circumstances, which were closely connected with the happy result of the affection.

These discharges, when they occur, are called *critical;* and the mendment is called a *crisis.* The ancients imagined that a crisis occurred particularly on certain days; and hence those days were called critical. During the first eleven days of fever, these critical days were of a *tertian* character; so that the third, fifth, seventh, ninth, and eleventh days, were critical days; and were supposed to be those, on which the disease was disposed to terminate well. After the eleventh day, the type was supposed to be *quartan;* so that the fourteenth, the seventeenth, and twentieth days, were then supposed to be critical. If a change took place, it was supposed to be most favourable and most complete when it occurred on those days. It might happen on other days; but it was then supposed to be less favourable. Some are of opinion that the testimony of Hippocrates and Galen, among the ancients, and of Dr. Fordyce,* Dr. Stoker, and Dr. Percival,† among the moderns, in favour of these critical days, is too great to be withstood; but others imagine that it was a

* See his "Dissertations on Fever."

† "Practical Observations on Typhus Fever; by Edward Percival, M.B."

mere hypothesis, founded upon the Pythagorean doctrine of numbers; or that it was taken from the types of *intermittent* fever, which the ancients supposed *continued* fever must very much resemble. De Haen says, that of one hundred and sixty-three terminations of fever mentioned by Hippocrates, one hundred and seven (that is, two-thirds) took place on the critical days;—namely, on the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, and twentieth; that none took place on the second or thirtieth; and only eighteen (that is, one-ninth) on the other non-critical days; namely, the eighth, tenth, twelfth, fifteenth, sixteenth, eighteenth, and nineteenth. Certainly the only types of fever now talked of here, are those of fourteen and twenty-one days; so that the common people will say, that a patient has a fourteen, or a twenty-one day fever. Perhaps the vulgar only retain notions which formerly prevailed among physicians. Physicians may have inherited these notions from the ancients; and so they may have come down to us, and still linger among the vulgar. The notion *may* be correct. Some persons say they do observe these things; but I cannot say that I have ever noticed the disease to terminate on one day, in preference to another. The reason that we do not observe what the ancients did, is said to be, that we are more active in practice than they were. We do not let nature take her course, but endeavour to knock a morbid process on the head; and we cure for more cases of fever than they did. We allow diseases to run on a much shorter period, than they were accustomed to do; and some ascribe the want of critical days to our active practice. To shew the inefficacy of the practice of the ancients, Broussais mentions that Hippocrates, in the first and third sections of his work an Epidemics, gives an account of thirty cases of acute disease; in which cases sixteen of the patients died, and the other fourteen suffered much afterwards. It must have been bad practice to lose sixteen acute cases out of thirty, unless in particular circumstances;—such as in the eastern epidemic, improperly called *cholera morbus*. Sir Gilbert Blane says, that, in the first and third sections of Hippocrates, forty-two cases of acute disease are mentioned; thirty-seven of which were continued fever, *without* local affection; and five *with* local affection. Of these twenty-five died;—twenty-one out of the thirty-seven, and four out of the five. If nature had an inclination to perform her cures on certain days, she had there a fine opportunity; but at the present day we so interrupt her course, that I have never observed critical days.

You may suppose, from what I have said, that the appearances after death will vary exceedingly. You will be prepared to expect that they are chiefly situated in the head, chest, and abdomen;—occasionally in *one* of these parts, occasionally in *two*, and occasionally in *all*; and you will be prepared to expect that, in all these parts, they will sometimes vary, both in their positive degree, and their relative proportion. You will also expect the appearances to vary, from those of active inflammation, down to very slight marks

of inflammation indeed;—where the case has been one rather of irritation than of inflammation; and you will expect them sometimes to be those, not merely of ulceration, but of gangrene, or an extreme degree of softening. The morbid appearances are chiefly found in the head and abdomen; just as the local symptoms during life are principally situated there; and occasionally we find degeneration of the structure of parts, without much inflammation; exactly as I said was often the case independently of fever. We have softening, and various other changes, without any marks of inflammation at all proportionate to those changes.

We will begin with the *head*. We shall sometimes find in the brain, more red points than usual. We shall sometimes find the arachnoid injected; both as to its superficial portion, and as to that portion which lines the ventricles. The veins and sinuses are frequently found turgid; and frequently there is too much serous fluid upon the brain, and in its cavities. But you must remember that, in all this, there is great room for fanciful opinion. On opening the brain, some will maintain that it is very healthy; and others will contend that there are more bloody points than there ought to be;—that the veins and sinuses are too full; or that there is more serous fluid than natural. You must take care, therefore, to be quite sure that you are right, when you assert that any thing preternatural is found in the cavity of the head. It will continually happen in fever, that there shall be rather more bloody points than usual; without the patient, during life, have shown particular symptoms of an affection of the head. These appearances will vary in different individuals, even in health; exactly as appearances do in other parts of the body. To enable us to say that there are decided inflammatory marks about the head, we ought to see appearances respecting which no one would entertain a doubt. When two or three persons differ in opinion, we ought to be much upon our guard in supposing, that there is really any morbid appearance. I know there is so much fancy in all these things, that it is absolutely necessary to exercise the greatest caution in drawing a conclusion. But sometimes you do find, in fever, more bloody points than natural in the substance of the brain. You sometimes see the vessels of the pia mater really in a state of congestion; sometimes the sinuses; and sometimes you find more fluid, indisputably, than ought to be there. This fluid is various in its appearance, as in all other cases of affection of the head. Sometimes it is clear; sometimes turbid; sometimes fragments of lymph may be seen floating in it; now and then there is even effusion of blood, or (at any rate) the serum is bloody. But very often in fever, after there has been strong phrenitis, or strong marks of excitement of the head, you will find nothing. I have repeatedly opened patients, who have died with marks of affection of the head, in whom the appearances after death have been quite disproportionate to the symptoms which occurred during life; and others in which I doubt whether any one, unprepared to *expect* any thing in

the head, would have *found* anything. Indeed, it is said by Andral, that the morbid appearances in the head, are less than those in the abdomen; and I believe this to be the case.

If the *chest* happen to be the part very much affected, (which is rarely the case), then you may have far more morbid appearances in the chest than in the head; notwithstanding many have said that the disease is situated in the head. If the thorax happen to shew marks of disease, you may find the lungs soft;—you may find them filled with a frothy red fluid; and sometimes they will crepitate as in health, and sometimes not. Sometimes they will be soft, and quite impervious to the air, especially if there have been extreme debility; and sometimes, but very rarely, they are in a state of gangrene. It is very rare to find them in a state of solidification, or what is strangely called *hepatization*. Because the lungs are as solid as liver, this morbid state is named after that organ; but it is most improper, because no part can be converted into liver. It may have the common qualities of liver, as to colour and consistence; but as to calling it hepatization, this is decidedly incorrect. This red *solidification* of the lungs, however, is rare. Now and then you will find them solid and grey in different parts;—spots of grey solidification; and it is common to find an abundance of red frothy fluid in them. One of the most frequent appearances in the chest, is redness and thickening of the bronchial tubes; because a slight degree of bronchitis is very common in fever. In almost every case, if you listen, it is said you may find more or less sonorous rattle; shewing a little bronchitis. Now and then the pleura is affected. An effusion is observed in the pleura; perhaps redness of the membrane; perhaps adhesions;—at any rate an effusion of lymph. Now and then even blood is found. The appearances, in fact, bear an analogy to those which are found in the head. The blood which is found in the heart and large vessels, is generally fluid, and of a very dark colour. As to the coats of the arteries being inflamed, that you will not necessarily find to be the case; though some have said that in fever they are always inflamed. The inner coats of the arteries may be inflamed now and then, like other parts; but you may open scores of bodies, and find no such thing.

If we come to the *abdomen*, we shall sometimes find marks of inflammation of the peritoneum, or at least of the sub-peritoneal cellular membrane;—if not of the peritoneum itself, of the cellular membrane immediately under it; or we may find inflammation within the stomach and intestines. The intestines are in general contracted, whether inflamed or not; but inflammation in the intestines is very common, as well as in the stomach; and is situated in the cellular membrane under the muscular coat, or in the mucous membrane itself. It has been long known that, in fever, the intestines are very frequently inflamed. Theophilus Bonetus, an old writer, says that inspections of those who died of intermittent fever, shewed that the stomach and intestines were inflamed. "Anatome

eorum qui febre malignâ extincti sunt, docet ventriculum cum intestinis inflammari."* Bartholini bore testimony to the same fact. "In omni febri acuta, imminet ventriculi inflammatio." Sydenham says that the intestines are frequently ulcerated in continued fever.† The knowledge of inflammation existing in the intestines, and also other affections, is not altogether new; though the fact was neglected. When you come to open the intestines, you will frequently find very extensive redness; and the redness will sometimes end suddenly, as inflammation of the skin will do; and sometimes it is lost insensibly in the surrounding parts. Occasionally you will find the redness extensive, running the length of a foot or so; but generally it is found merely in patches. Occasionally this redness is arborescent; and has little red spots around it. The redness varies in hue, from a bright red to a brown, or even a purple shade, according to the degree of congestion; and sometimes it is a very dark red. In continued fever, the mucous coat is often thickened; and it may be thickened to a great extent, or only in patches. Sometimes it is softened; and, indeed, all the coats of the intestines, are sometimes in the same condition,—softened. On the inner surface of the intestines,—the mucous membrane,—there are frequently small, red, conical elevations,—pimples; like the fringes below the tongue; or little white projections, either conical, or with a central depression. These last appearances are observed much more in the inferior two-fifths of the small intestines, than elsewhere; indeed, it is in this situation that we find the chief morbid appearances. In the colon they are generally pointed. Occasionally these white conical elevations, are real pustules;—or at least small follicles, containing real pus; so that you have what may be considered pustules.

The secretion of the intestines is, of course, diseased. You find the mucus of a thicker quality than it should be;—sometimes almost as thick as fibrin; and sometimes it is bloody. The mucous membrane will frequently peel off; not from any affection of its own, but from the cellular membrane which attaches it to the next coat being so brittle, as no longer to form a medium of union. Very frequently a quantity of blood is effused into the cellular membrane, under the mucous coat. Nothing is more common than to find ecchymosis;—an effusion of blood into the cellular membrane, under the mucous coat. Ulcerations are continually found in the lowest third of the ileum, nearest to the cœcum; and the nearer you come to the cœcum, the greater is the degree of ulceration. These ulcers are frequently seen in the midst of red patches. I just now mentioned the frequent occurrence of red patches; and in the midst of these there is frequently ulceration; and then, again, the surface beyond the patches is frequently pale. It would seem that superficial inflammation had taken place locally, with great severity; and in the centre had proceeded to ulceration. But you will find these ulcers

* Bonetus (T.) "Sepulcretum, sive Anatomia Practica;" 3 tom. folio.

† See his "Opera Medica;' or the same work translated, by Dr. G. Wallis; 2 vols. 8vo.

frequently occur, also, in the little pimples or pustules of the glands; so that you have in the intestines two kinds of ulceration;—the one superficial, giving you the idea of an abrasion, (such as occurs in the mouth, throat, or on the organs of generation);—and the other occurring in the glands. These ulcerations are of all sizes, and of all shapes. You sometimes see a portion ulcerated to a very great extent; and sometimes these ulcerations are sloughy; or at least you may detach a sloughy layer of something;—perhaps sometimes a diseased secretion; and underneath you find an ulcer. Surrounding the glandular ulceration, you will frequently see the mucous membrane more or less detached; and the ulcer of course extends to various depths. Sometimes it extends so deeply, as to go through all the coats, and perforate the peritoneum. When this occurs, there is generally sudden peritonitis induced. Pain is felt at a particular spot, and darts from it in all directions; and speedy death generally ensues. Nature, however, sometimes prevents this (as I formerly said) by producing adhesion; or perhaps the perforation is blocked up by a piece of omentum, or something else; but if this do not occur, violent peritonitis takes place, though not always. Occasionally the inflammation which is produced, is of a slow, chronic form. The patient recovers from the fever; but continues to labour under peritonitis, in a chronic form. Occasionally there is no pain; but this is rare. Generally, when a perforation occurs in the peritoneum, violent peritonitis is induced; and the patient sinks. Now and then, you will have an abscess in the *substance* of the intestines;—in their cellular membrane, I presume. It occurs as it does in the cellular membrane any where else. The peritoneal and the mucous coats being sound, the matter is produced between them; and is contained in the cellular coat. With respect to inflammation of the *muscular* coat of the intestines, I do not believe that such a thing occurs. Mucous, cellular, and serous membranes, are far more frequently inflamed than muscles. It is rare for muscles to be inflamed; and there is sufficient of the former structures in the intestines to become inflamed, without supposing that the muscular coat is the seat of inflammation.

The period at which these ulcerations may take place, is very various. It would appear that, occasionally, they will take place rapidly; because persons have shewn them who have only had fever a couple of days; but generally they occur slowly. They are more frequently observed in persons who die of fever, than in those who fall victims to other complaints. The large intestines are seldom affected;—at least, far less so than the stomach or the small intestines; and of the latter, it is in that portion nearest the cœcum,—the lowest third of the ileum, or at the utmost the lowest two-fifths,—that you chiefly find these appearances.*

* The learned Professor here exhibited several plates, executed by Dr. Carswell, illustrative of the various morbid appearances he had described, as occurring in the intestines. He subsequently introduced a very fine specimen of ulceration of the intestines after fever; with which he had been furnished by Dr. Tweedie, physician to the Fever Hospital.

Now some have patronized the head, and determined that it shall be the seat of fever; and that fever situated there shall be inflammatory; whereas others have had a predilection for the abdomen, and have declared that fever is seated there, and that it is imflammation of the intestines.* It is true you may find morbid appearances there; but it is also true that you may open cases of fever, and find the intestines sound; or, at least, with no such appearances as will explain the symptoms of fever. I have, over and over again, inspected cases, in which there was no ulceration of the intestines,—no inflammation even; and in which, if persons had not been told it was a case of fever, they would not have known it. There might sometimes have been a little more redness than usual, in this or that intestine; or if even there was any thing morbid, still it was insufficient to account for the general symptoms of fever. The symptoms observed during life, frequently depend upon local affection; but frequently you will find no disease existing in any particular part. Andral, I think, is one of the soundest writers on Medicine. He appears to have no theories; but to look out for facts, and to make the most correct and philosophical use of them. I have found all he has said, in his Clinical Reports, to be confirmed; and though it was not till lately that I read his book, yet I was delighted to find the coincidence in our facts and inferences. He says, that of thirty-eight cases of fever which he examined, only eleven presented marks of gastritis sufficient to have influenced the symptoms during life. Thirty out of the thirty-eight shewed some sort of intestinal affection; but only fourteen of these (that is, fourteen out of thirty-eight) exhibited such a morbid affection of the intestines, as could explain any of the symptoms during life. He also says, that the changes which are seen in the nervous system, are comparatively rare and slight. I do not think that fever is to be explained by Morbid Anatomy. Many of its symptoms, and many of the occurrences which take place, may be thus explained. When there is phrenitis, you will usually have the *marks* of phrenitis; when there is bronchitis, you will usually have *marks* of bronchitis; when there is diarrhœa, you will expect to find ulceration of the intestines;—but frequently there is little or none of these symptoms; and after death there are no such marks as will explain fever; although there may be enough to explain the local symptoms that have occurred. Continually you will find, in fever, that the head is but slightly affected after the first few days; and that the abdomen is scarcely affected at all.

I believe that, in fever attended with extreme exhaustion, the muscles are generally soft and livid. The blood, I mentioned, is generally fluid and black in the large vessels; and the muscles are generally soft and livid;—a fact altogether corresponding with the

* Dr. Clutterbuck and M. Broussais may be considered as the heads, respectively, of these two pathological schools. See "An Inquiry into the Nature and Seat of Fever; by Henry Clutterbuck, M.D.;" and "History of Chronic Phlegmasia, or Inflammation. By F. J. V. Broussais, M.D. Translated from the French." 2 vols. 8vo. Philadelphia, 1830.

state of the blood. I mentioned that if, in a case of typhus fever, where there is great prostration of strength, you analyze the blood, you will find that it contains less saline matter than there should be; and it is said to contain less carbonic acid than natural; in fact, it is more like lymph than blood. The liver and spleen are rarely affected. The bile is often abundant, and sometimes very dark and thick; but in other cases it is just the reverse;—pale and thin. Sometimes it is acrid, and sometimes not. The liver or spleen may exhibit marks of inflammation; or, if not inflamed at the time, you may see the *results* of inflammation, in a little suppuration, &c. They may be softened. But all these things are very uncertain. So far, then, with regard to the symptoms of fever during life; and the morbid appearances after death.

As to the mode in which we form our diagnosis, and determine that the case is one of fever, it is, in a great measure, by observing that the constitutional symptoms are disproportionate to any local affection which may exist. The constitutional symptoms are, of course, influenced by a local affection; but they are out of all proportion to it; and frequently they are altogether of a different nature. For example,—there is often no local sign of inflammation, or of any local disorganization, to be discovered; but there is extreme debility from the very first;—a sense of debility, indeed, which is not observed in any mere inflammation. The countenance, too, is peculiar;—expressive of both anxiety and oppression. There is almost always, from the first, pain of the loins; and, nearly throughout the disease, tremor of the tongue. All these circumstances are very different from those which we see, in mere inflammation of the brain, or of the chest. You sometimes may have a local inflammation of the liver, or of the stomach; but you have also a disproportionate loss of strength; perhaps a feeble pulse; perhaps a putrescent state of the body;—symptoms, in fact, of a character different to those which arise from mere local inflammation. The countenance, and the sense of debility, are very characteristic from the very first.

As to the prognosis, of course it must be taken, in the first place, from the severity of the disease; but you need not give an unfavourable prognosis, because the constitutional symptoms of excitement are very violent. Here *general* excitement is by no means dangerous; but when it is accompanied by extreme *local* excitement;—by marks of severe local inflammation, then there is reason to apprehend danger. As long as you can discover no great marks of inflammation in the head, chest, or abdomen, the general excitement, however violent, is not in itself dangerous. But although you have no right to infer danger from extreme excitement, when there is no great local affection, yet symptoms of an opposite description are always dangerous. In proportion to the intensity of the signs of debility, is the degree of danger. Intensity of general excitement, is not alarming in proportion to the excitement; but the danger is proportionate to the marks of real debility.

The marks of debility in fever, are great rapidity and weakness of

pulse. Andral says that he never knew a person recover from fever, whose pulse exceeded 140; but I believe it is well known that recovery will take place after a pulse even of 160, however dangerous such a pulse may be. Dr. Heberdeen mentions recovery from fever, after a pulse of 180. If rapidity of pulse be accompanied by weakness, then of course the danger is so much the greater. Involuntary discharges of the urine and fæces, likewise shew great danger; because they prove extreme debility; or extreme local affection,—of the head or abdomen, for instance. They will arise from the patient being unconscious of what he is about,—from being in a state of stupor; and they will also arise from the patient being too feeble to make an effort to restrain them; either of which conditions is extremely dangerous. You will learn much, too, from the position of the patient. When a patient lies on his back, there is more danger than when he lies on his side;—a greater effort being required to maintain the latter posture; but if the patient sink in his bed, the danger is greater still; for it then shews that he has very little power at all. A person can exert the muscles of deglutition, long after he has lost control over those of the trunk; and an inability to swallow, therefore, is one of the most dangerous symptoms. The countenance, I have already intimated, is a good index to the degree of danger. Blackness of the tongue, and of the teeth, is also more or less dangerous. We see patients recover every day, whose teeth have been covered with sordes, and whose tongue has been black; but still it is a bad sign. Abundance of the discharges, too, is generally dangerous, unless the symptoms remit; and the danger increases in proportion to their depraved nature. Another very unfavourable symptom is the discharge of blood, or its effusion under the skin,—forming petechiæ, vibices, and ecchymoses. Of course, the larger these spots the greater the danger;—vibices being more dangerous than petechiæ; and ecchymoses more dangerous than vibices. Still, however, the presence of petechiæ in itself is not dangerous; for some epidemics are characterized by it; but if it be very considerable, and accompanied by other marks of exhaustion, then it is dangerous. Hiccup, too, is a dangerous symptom; on account of its usually coming on towards the fatal termination of the disease; but, now and then, fever may attack dyspeptic persons; and you may have hiccup, not so much from fever as from the disposition to it, occasioned by the habitually weak stomach. Early debility is a very unfavourable sign. Debility, after the disease has existed for a fortnight or three weeks, would not be so dangerous as the same degree of debility at the beginning of the disease; because, if the affection be to last for a fortnight, and you have at the beginning the same debility which, in other cases, you have at the end of a fortnight, the debility may be such when the latter period arrives, that life may be extinguished. The more intense the debility, in the early stage of the disease, the greater is the degree of danger to be apprehended.

When a person has violent pleuritis, peripneumonia, enteritis,

peritonitis, or any other local inflammation, of course the danger is aggravated; and the danger frequently rests solely upon this local affection. The age and constitution of the patient, are important considerations. Individuals of bad constitutions, who have been badly fed, or addicted to the vice of drinking, or have suffered from the want of proper rest, are of course very liable to fall victims to the disease. We must always consider the character of the epidemic; for if we know it to be of a dangerous nature, we should always give an unfavourable prognosis even at the outset, before dangerous symptoms have come on. We are sometimes obliged to give an unfavourable prognosis, from the state of the patient's mind. I have often seen patients die of fever solely because their mind was uneasy. I have seen two or three patients, within the last six months, who in all probability would have recovered from fever, had it not been for an unfortunate state of mind. If a patient has made up his mind that he shall die, or some real calamity presses upon him, then the medical man has a far less chance of success, than if his mind be in a state of happiness and tranquillity. If you know this to be the state of the patient's mind, you should speak with more caution than you otherwise would, even though things are going on favourably; for you have an additional enemy to contend with. You must also in giving a prognosis, have reference to the power which you possess of doing your duty. Sometimes, through the whims of friends, or the unwillingness of the patient, you are not allowed to do what you desire; and sometimes you are prevented, by another practitioner, from being quite as active as you wish in the use of means. These things are all to be taken into the account.

As to the grounds of a favourable prognosis, I need not say that they are the decline of all the symptoms. But you must be on your guard, when the symptoms are declining generally; and ascertain whether all is well throughout the body;—whether there may not be some local circumstance still existing, from which danger may be apprehended. For example,—fever will sometimes decline when the loins slough; and the patient may then die of exhaustion. A return of strength is one of the best signs. When a patient no longer sinks in bed, but is able to lie on his side, then the prognosis is favourable. You may judge much from the countenance, and from the feelings of the patient himself. It has been thought that deafness is a favourable sign;—at any rate, it is *not* an *un*favourable sign. Many authors have thought it favourable; but why it should be so, I do not know. In many cases of fever, patients become very deaf; and they recover, just as though this circumstance had not occurred. The return of all the feelings of the patient to a state of health, must contribute to a favourable prognosis. Dr. Gregory used to mention, as an instance of this, an amusing circumstance showing, not that the *stomach* had returned to its duty, but that *other parts* of the system were improved. On the doctor visiting one of his hospital-patients, labouring under fever, the man told him that he was much better; and added (as a proof of it) that he longed to have his mistress; on

which some wag put down in the prescription-book,—"Let him have his mistress." Dr. Gregory was too good-natured to be offended at any little joke of that sort; and used to mention it, year after year, with the greatest glee.

I will not enter upon the *exciting* causes of fever now; but will speedily run over the *predisposing* causes; and the first I shall mention is mental depression. Many persons do not become the subjects of fever (though exposed to all the exciting causes) till their mind is depressed. I have known many persons go, year after year, to spots where fever prevailed, from some local circumstance, with perfect impunity; till some calamity happened which greatly depressed their minds; and then they became the subjects of fever. It has been observed, with regard to the plague, that persons have not fallen victims to the disease, till they have lost a relative, or been cast down in spirits; and then they have sickened immediately. Diembroek mentions an instance of this kind. A person escaped the plague, till he saw a funeral pass by; and, on inquiring whose it was, he found it was that of one of his dearest friends. He went home, sickened of the plague, and died. The same circumstance occurs with regard to fever, and all other complaints. Anxiety of mind will have the same effect;—downright grief, or anxiety lest misfortune should occur. Corporeal depression, and over exertion of mind, will have the same injurious tendency. Too much muscular exertion, excess of venery, and debilitating circumstances of all descriptions, whether of mind or body, will lay the foundation for fever. The *want* of food, and *bad* food, are both predisposing causes. Famine and fever generally go together; and hence, perhaps, we pray in the same breath against "plague, pestilence, and famine." Want of fresh air also predisposes to it. Adult age (or, at least, the vigorous period of it) appears the most inclined to it; for infants, and very aged persons, have fever less frequently than others. It is in adults, and not in the aged, that we most frequently see fever. Besides this, there appears to be a peculiar susceptibility to it in some persons; they will, with no evident reason, become the victims of fever, when placed in the same circumstances in which others escape.

Some of the *predisposing* causes of fever may, by their continuance, become *exciting* causes. It is possible that the continuance of debauchery may, without any additional exciting cause, increase the disposition so much, that at last the disease itself begins;—requiring nothing at all, in addition to the debauchery, to produce it. One cause, certainly, of continued fever, is exposure to cold; especially when the body is over heated. Many cases of fever appear to have nothing to do with any other exciting cause, than exposure to cold; especially when this is united with wet; and more particularly when the body is overheated and fatigued. Besides these very common causes of continued fever, there is generally allowed to be one of a peculiar description;—contagion. Before considering this point, however, it will be necessary to make some remarks on the subject of contagion in general.

By "contagion" is generally meant, I believe, either a peculiar matter generated *in*, or a depraved secretion *of*, a living system under disease; capable of producing the same disease in others, when there is *no indisposition* to it; and more especially if there be a *predisposition*. This, I conceive, is what is generally understood by "contagion."

I have said "either a *peculiar matter* or a *depraved secretion*," because, in the greater number of instances of contagion, it is a depraved secretion. Very frequently it is pus;—pus, frequently, in small-pox; pus in syphilis; pus in glanders; pus in a variety of diseases. In the case of hydrophobia, it is either mucus or saliva; and in other instances it is apparently mucus. In the case of the skin, it sometimes appears to be sweat; but, for what we know, it may be sometimes separated from the body, unconnected with the real natural secretions of the latter. It is possible that an emanation of some kind may take place from the surface of the body, or the lungs, and infect the air, independently of the aqueous fluid which is separated from those organs; but whether such is the case I do not know. To avoid, however, the objections of those who admit such a thing, I think it better to say that it is "*either* a peculiar matter, *or* a depraved secretion." I have said,—"*living* system," instead of "*animal* system," in order to avoid the objections of those who might urge, that contagion occurs in vegetables, as well as in animals; and of course it is the characteristic,—the necessary attribute of a contagion, that it should be able to produce the very same disease in others. Not that it can produce it in *all* others; because there are some that will not take a particular contagion; but it is able to produce it in others, who have a *predisposition* to it; or rather, I should say, who have *no indisposition* to it. I said "others" (referring to the antecedent phrase,—"living system"), because contagions produced by one species of animals have, in many instances, affected other species; for there are several diseases of the inferior animals, (or brutes, as they are called), which may be communicated to the human body. It is necessary to say, therefore,—"produced in a *living system;* and capable of exciting the same disease in *another* living system;"—not of the *same species* merely; but "another living system,"—speaking at large.

When diseases are so produced, they may be, in the first place, either *acute* or *chronic*. What are called "the exanthemata," are acute diseases; such as scarlet fever, measles, small-pox, chicken-pox, cow pock, and the plague; and so are hydrophobia and typhus (if the latter be a contagious disease); whereas the itch, syphilis, porrigo, elephantiasis, the yaws, the sibbens, and a disease (peculiar to Africa) called "laander," always become chronic if not checked; and are not more active at first than afterwards. Some contagious diseases may be considered both acute and chronic. The hooping-cough (if it be a contagious disease) comes on, usually, as an active disease;—with all the activity of the most acute diseases; and yet it may run on for a length of time; so that it may be either

acute or chronic; whereas scarlet fever, measles, small-pox, chicken-pox, hydrophobia, and typhus fever, cannot be chronic;—they are always acute. Syphilis, which I mentioned as being a *chronic* affection, cannot indeed be so considered when it first begins; but it rarely has, comparatively, the activity which characterizes acute diseases. Hooping-cough, however, is generally active at the onset; and frequently it has the activity of small-pox or measles; but it may run on for many weeks,—perhaps even months. Contagious diseases, both acute and chronic, are sometimes *febrile*, and sometimes *non-febrile*; and therefore it is better to divide them into acute and chronic. Hydrophobia is an instance of an *acute* disease of a contagious kind; but it is not in the least *febrile*.

Some of these diseases must be communicated by contact, either with the patient, or something that he has touched; or some palpable matter that has proceeded from him. Of this kind are itch, syphilis, cow-pock, hydrophobia, elephantiasis, yaws, sibbens, laander,—the three latter of which I have never seen,—and the glanders of horses; together, in all probability, with the plague, and porrigo or scald head. Some, again, may be communicated both by contact, and merely by the atmosphere surrounding the patient. In the latter case, there must be the contact of something which has emanated from the patient; but then that something has not emanated in a palpable form. It is not the contact of any solid, or any liquid, that is to be *seen*; but the contact of something *invisible*. Still, that something must have proceeded from the patient. The diseases which may be communicated both by contact with the patient, or by something that he has touched, or something palpable which has proceeded from him; or which may be communicated by merely being exposed to his atmosphere,—are the small-pox, the chicken-pox, scarlatina, and the measles. The latter, as I shall have occasion to state hereafter, have certainly been communicated by inoculation; —just like small-pox. It is probable that, by means of something in the atmosphere which is not palpable, but which has emanated from the patient, we may become the subjects of typhus,—if it be a contagious disease,—and of hooping cough. Even if an individual touch another labouring under these diseases, still it is probably not the mere contact, but an impalpable emanation from the patient, that gives the disease.

The adjective "*contagious*" embraces all the diseases we have enumerated; but it is also employed, in a restricted signification, to distinguish those which are communicated solely by contact with the patient, or with something that he has touched, or with something that has proceeded from him palpably; whereas the word "*infectious*" is given to those diseases, which may be communicated by merely being exposed to the patient's atmosphere. The word "*contagious*" is used in the same way as the term "*horse*." The latter is used to include both a horse and a mare; but it is frequently applied to the male only; and so these diseases are all continually spoken of as contagious; but the word "*contagious*" is also employed

in a limited sense, to signify those diseases which are communicated by actual contact; or by touching something which the patient has touched; or something which has palpably proceeded from him. You will hear quibbles about this; but it appears to me that the word "*contagious*" is used as I have now stated;—that you may separately have a contagious and an infectious disease; but that you may express them both, according to established custom, by the word "*contagious.*"

Some diseases are both contagious and infectious;—may be communicated either by contact, as I have already said; or by merely being in the neighbourhood of the patient. Now it is observed that, when a disease may be communicated in both ways, it is communicable more quickly by contagion, than by infection. If two persons be exposed to an atmosphere infected with small-pox, and you inoculate one with the virus, the disease will appear in him much sooner than in the other. It is a well-ascertained fact, I think, that contagion, in the limited sense of the word, excites the disease sooner than infection, when the disease may be produced in both ways. Hence, when a person is exposed to the infection of small-pox, it is the practice to inoculate him as quickly as possible; in order to bring the disease on in the artificial manner, before it can arise by infection. Again, some diseases are thought to be only *occasionally* contagious;—I use the word "contagious" generically. Catarrh is supposed, by many, to be sometimes infectious; but I do not know whether it is. Ophthalmia certainly appears to be sometimes contagious. In the greater number of cases it is not; but it would appear, undoubtedly, to be contagious in certain cases. Erysipelas is not considered to be a coutagious disease; but Dr. Wells, in a paper published in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge,"* furnishes very strong reasons for suspecting that certain instances which he details, were instances of erysipelas by contagion. Continued fever may be an instance of the same kind; certainly it arises continually without contagion; but in other cases, I am very much disposed to think that it is contagious.

Some diseases, again, are contagious only *for a time.* This is the case with gonorrhœa, and with hooping-cough. There is no doubt that, after a certain time, the discharge from the urethra (call it what you please,—*gonorrhœa* or *gleet*) is perfectly inocuous,—can communicate no disease. It is the same with hooping-cough. Children will continue to hoop, long after any chance exists of communicating the disease to others. It is said that some diseases are only *partially* contagious. The instance of this which is usually alleged, is syphilis. The matter from the primary sores of syphilis—a primary bubo,—will communicate the disease. It is contagious enough; but it is said that the matter of secondary sores is not contagious. It is impossible to make experiments on this subject; and therefore I cannot tell you whether those who assert this are correct or not.

* Volume ii. page 213.

Some contagions appear to be occasionally generated afresh. Some of those diseases which will give rise to a something capable of producing the disease in others, do appear to be produced *de novo*. The itch, at any rate, will sometimes occur in patients after continued fever, where it is not possible to trace it to any other persons. Hydrophobia, there is every reason to believe, will sometimes spring up in the same way. Dogs become the subjects of the disease, without it being in our power to trace it to any other animal;—where there is no probability of their having being exposed to contagion. The same is true of the glanders in horses. This is also said to be the case with regard to typhus;—that a patient has become the subject of it, from a mere common exciting cause; and that he has been known to give it to others. Of this I cannot speak; because I never saw typhus fever contagious. With regard to all these diseases,—itch, hydrophobia, and typhus, (granting the latter to be contagious), whether you choose to believe they will ever occur *de novo* or not, still they must have had that origin at some time or other; and it is not more wonderful for them to occur *de novo* now, than that they were originally produced. There must have been a person who first had measles, small-pox, scartlet fever, and so on; and who could not have derived it from any other person. If we even go to brutes, still the difficulty is the same; for some of them must have had the disease first of all. It must have occurred *de novo*, in some one instance or other. Indeed, it is not certain that small-pox, chicken-pox, hooping-cough, scarlet fever, and measles, do not occur, from time to time, without contagion. We frequently see children labouring under these diseases, who have been shut up in the country; without having had communication, directly or indirectly, with any others who could have had them; or having been near persons who had visited others suffering the affection;—at least, so far as we can trace it. It is possible, however, that an error may exist on this point; and that there *has* been communication; but certainly the ascertainable absence of all communication, direct or indirect, occurs so often, that I do not think we have a right to assert, that the diseases in question never occur *de novo*. I give no opinion on the subject; but I would not be positive on the negative side.

Some contagious diseases occur rarely more than once. Among them we may mention cow-pock, chicken-pox, small-pox, measles, hooping-cough (by which I mean the real disease,—not a spasmodic hoop), and scarlet fever. We must all have seen instances of a second occurrence of these affections, and sometimes perhaps of a third; but the general rule is for them to take place but once; while the rest may occur more than once; and, indeed, some of them an indefinite number of times. It is unfortunately too true, that some persons suffer syphilis and gonorrhœa over and over again;—not, certainly, to all eternity; but as long as they expose themselves. It would not answer the moral end of these complaints were they, like small-pox and measles, to be had but once. With regard to hydrophobia, it is

not known whether it may be had twice or not. So far as I am acquainted with the subject, both human beings and dogs have always died of the disease when seized with it; and therefore we cannot tell whether it may be had a second time.

Another circumstance I may mention is, that we have an instance (or, at least, we *generally* have an instance) of one contagious disease preventing another. The cow-pock is supposed to prevent the small-pox; and, for the most part, it certainly does; but it is to be considered, that it is not by any means proved, that cow-pock and small-pox are not the same diseases;—the former being modified. If they be but one disease, the fact of cow-pock preventing small-pox merely resolves itself into the fact, that some contagious diseases do not usually occur more than once; but if they be distinct diseases, then it is an instance of one contagious disease preventing another.

Now, although you may put each of these diseases into one class or other of those I have been enumerating, yet it does not follow that a disease which is placed with another in *one* class, will be side by side with it in *another* class. These classes are all distinct;—the characteristics of each have no relation to those of another. The diseases which meet in one class, will not meet in another; and the affections which are of different classes in one respect, will meet in another class with others. For example,—hydrophobia is of the class of acute contagious diseases, together with small-pox;—both are acute diseases. But small-pox is in the class of those, which may be communicated either by the atmosphere or by contact; whereas hydrophobia is in the class of those, that can be communicated only by contact,—by the application of palpable matter. Itch and syphilis meet in the class of those, that can be communicated by contact only; yet there is no reason to believe that the latter occurs *de novo;* while I think we have some reason to believe that the former does. The cow-pock is in the class of those, which can be communicated by contact only; and so is itch; yet cow-pock is in the class, also, of those which occur but once; whereas the itch is in the class of those which recur indefinitely. Hence you see that the classes have no relation whatever to each other.

When a contagion has been applied, there is for the most part an interval before it operates;—there is usually an interval, between the application of the poison and the appearance of the disease. This interval is various in different diseases; and it is various in different cases of the same disease. The interval of small-pox is very short, compared with the interval of hydrophobia; and then again, the interval of the latter is by no means always the same. It will ary, from a few weeks to a few months.

Some of these contagious diseases which are infectious,—using the word "*contagious*" in a generic sense, to comprise both,—are very easily prevented by dilution of the atmosphere. You will find a great difference in diseases, in this respect. The contagiousness of diseases which are infectious, or (if you choose) the *infection* of some diseases, is very easily annihilated by dilution; whereas great dilution has

comparatively little effect on others. The infection of small-pox, and of measles, will sometimes operate in a very free ventilation. It is thought, by some, that their infection will not extend to a very great distance in pure air. But, at any rate, in the *purest* air, we see these diseases caught by children, in the neighbourhood of those that labour under them; whereas other diseases cannot be caught, if any pains at all be taken to dilute the air. As a remarkable example of this, I may mention that the contagion of continued fever (if continued fever be allowed to be contagious) may be dissipated with the greatest ease. A comparatively trifling dilution of the atmosphere around the patient, will prevent it from being communicated to any one; whereas a great dilution will frequently not prevent the small-pox or the measles. So easily is the contagion of continued fever (supposing it to be contagious) dissipated, that if there be a very free ventilation around the patient, there is little or no danger of any one catching the disease; and it is asserted that, in small-pox, the contagion, in the worst cases, will not extend beyond half a yard, in the open air. Dr. Haygarth, in his celebrated letter to Dr. Percival,* says that the infection of small-pox will not extend beyond the distance of half a yard; and that of continued fever much less; and this is one reason why the contagious property of the latter has been denied altogether. You will find many persons who deny that continued fever is ever contagious. Granting, however, that it is contagious, we may have another reason for explaining the circumstance of its frequently not spreading far;—it may not be *always* contagious, but only *occasionally* so; like erysipelas perhaps. Another reason is, that persons, for the most part, escape the influence of the contagion, if they be in good health and spirits while exposed to it. I presume that neither good health, nor good spirits, nor good nourishment, nor any other good thing, however favourable to health, will render a person less disposed to catch the small-pox, or to catch syphilis; but it is a fact that, if a person be in excellent health and spirits,—if he have every means of promoting health in his power,—if all be healthful in and about him, he may be exposed to the emanations of a person labouring under the most virulent typhus, and yet for the most part escape. If, however, his mind become depressed, or if his body become debilitated in any way, then you will see the same person become the victim of the complaint, when exposed to the emanations of a typhous patient in so slight a degree, that you would hardly suppose it possible for the disease to be communicated. Many persons are exposed, with impunity, to the emanations from patients labouring under typhus, till their mind desponds; or by some chance they are thrown out of health; and then the contagion,—if typhus be contagious,—acts as a predisposing cause; and the depression of the mind, or the accidental depression of the bodily powers, acts as an *exciting* cause. We have seen that, in the case of ague, a person may be exposed to malaria, and not

* "Letter to Dr. Percival, on the Prevention of Infectious Fevers; by John Haygarth, M.D."

suffer the disease, till he gets cold and wet through;—the common original cause of the disease, the malaria, being the *predisposing*, and catching cold the *exciting* cause. Exactly so, in typhus, the peculiar contagion is often the *predisposing*, and depression the *exciting* cause. I mentioned that, in the instance of the plague, persons have been known not to experience the disease, till they have lost some of their most intimate friends; and have thereby become depressed. Diembroek, I stated, mentions an instance of this kind; and there are hundreds similar.

These things are all to be considered, when we question whether continued fever is contagious or not. It is allowed by those who contend for its contagiousness, that the contagion is one which most easily dissipated by ventillation. In the next place, it is allowed by them, that if a person be in good health, and with every means of health in full play, he will generally escape; and if it be a fact that the disease is sometimes contagious, and sometimes not, and sometimes arises *de novo*, then we see another reason why some people have denied the contagion of the disease altogether. However, I am quite sure that much of the difference of opinion, on this subject, must have arisen from this circumstance,—that many diseases have been called typhus, which were no such thing. There can be no doubt that many of the cases of continued fever which we see, are really cases of *remittent* fever, dependent upon malaria;—having nothing at all to do with contagion. We every day see cases of remittent fever, mistaken for typhus, but easily distinguished from it by nice observers; and persons may be exposed to such cases, without suffering the disease; and therefore typhus is continually said not to be contagious; whereas the patient really labours under remittent fever, which is not a contagious complaint.

Some contagious diseases are communicated from brutes to man. Hydrophobia, cow-pock, and (it would appear) small-pox, are of this description. Every one knows that the cow-pock may be given to the human subject; but it is said that some experiments have lately been made, with success, to give the small-pox from the human subject to the cow; and these have been adduced as proofs that the two diseases are the same; because the disease produced in the cow by the *small*-pox matter, was the *cow*-pock. The itch is a disease communicable from brutes to man; at least, it is said that a kind of itch is produced from mangy dogs. There is a peculiar disease in Germany, mentioned under the name of *milzbrand*,—inflammation of the melt. It is a disease of brutes, analogous to what has been called *malignant pustule;* and is communicable to the human subject. Many persons have had malignant pustules produced in them, by merely touching the blood of animals labouring under a certain disease; or perhaps by merely putting into their mouth a knife wetted with the blood. The glanders of the horse is another disease, which may be unquestionably communicated to the human subject. It is possible that all those diseases, which may be so communicated from brutes to man, may be given back from man to brutes.

M. Magendie has made experiments with regard to hydrophobia. He inoculated dogs with the saliva of a man labouring under hydrophobia; and he says, they became the subjects of the disease. The cow-pock, I believe, may be given from the human subject to brutes; and so, unquestionably, may the glanders. Whether any other contagious diseases than those I have enumerated, may be given from brutes to the human subject, I do not know; but I should think all these may be given back. It is said that there are some other diseases, which may be communicated from man to brutes. The plague, it is said, has affected brutes; sheep have been seen to catch the measles; and the disease called *trichoma* may also be communicated to brutes.

I mentioned that there are some contagious diseases, to which persons are very much disposed by being out of health; and I instanced typhus fever; whereas, other contagions act as well upon persons in health as out of it. But it would appear that sometimes bad health will *prevent* a contagious disease. It is well known, I believe, among vaccinators, that they frequently cannot give a child the cow-pock, when it is labouring under any cutaneous affection. It is found by many who vaccinate to a great extent, that they cannot give a child the cow-pock, when it is labouring under any disease, such as scald-head, or any chronic eruption. This may simply arise from the body being indisposed to take on two diseases at once;—not that the body is out of health altogether; for, a cutaneous disease is frequently but a *slight* affection. Habit lessons the susceptibility to some contagions; at any rate, persons who are continually exposed to the infection of typhus fever, in its most concentrated form, generally escape; and so with respect to the plague. A new comer, into some situations, will sometimes suffer immediately; while those who have been accustomed to it will go on with impunity, and never suffer. Habit appears to have a great influence upon contagion;—just as it has with regard to the aguish effect of marsh miasmata.

Some persons have an unaccountable indisposition to certain contagions. Some children will not take the small-pox, though they sleep in the same room, and even in the same bed, with others labouring under it. The same has been observed with regard to the measles; and (what is very singular) after a lapse of time,—sometimes a year or two, and sometimes longer,—the least exposure will produce the disease in the same individual. It is well known that some persons run into all sorts of risks, with respect to syphilis and gonorrhœa, without using any precaution; and invariably escape, though as bad as their neighbours. In fact, I have known persons of that description; and yet, after a time, they began to catch the disease whenever they ran the chance of so doing. It is the same with respect to small-pox and measles in young persons, as it is with regard to syphilis and gonorrrhœa in adults. The extremes of age are very insusceptible of many infections. Some persons, again, without any indisposition (so far as can be observed) escape, without our knowing why. A person shall be exposed, for example, to the

poison of syphilis to-day,—the existence of morbid secretion being proved by the fact that others, yesterday or to-morrow, suffer from the same source,—and catch nothing; and yet, a fortnight afterwards, the same source may give the disease to him. Persons without any indisposition, sometimes do escape, without our knowing why.

You would hardly suppose it, but still it is the case, that some persons deny there is any such a thing as contagion. Some deny the contagiousness of one disease, and some of another; but there are some who maintain, that contagion was unknown in ancient times, and is altogether a modern invention. There is, or was, one person so convinced of this, (in the case of hydrophobia), that he has written a pamphlet to prove it. He contended that it is a mere imaginary disease; that, at any rate, the symptoms which have occurred, have never taken place *through hydrophobia.* He says that he has inoculated himself, again and again, with the saliva of a rabid animal; and has escaped. His escape, however, is no proof of the non-existence of contagion; because many persons escape all sorts of contagions, every day. Two medical students, at Paris, went so far as to deny that syphilis was contagious; and in the year 1823, they inoculated themselves with some syphilitic matter. They laughed at contagion; and gloried in having some syphilitic matter under their skin. However, the consequence of this experiment was a very bad suppuration in, and a partial destruction of, the axilla of one young man;—he having inoculated himself on the hand; while the other had a bad ulcer somewhere else; and became so distracted at what had happened, that he actually committed suicide, by opening the crural artery. Others have done exactly the same in the case of the plague; and they have suffered exactly in the same way. A Dr. Whyte was convinced that the plague was not a contagious disease; and therefore, in the pest-house of the Indian army at El Hammel, he rubbed some pus, taken from the pestilential bubo of one of his patients, inside his own thigh; and not contented with this, he inoculated his wrist from another pestilential bubo. Four days had hardly passed, before rigors began; with all the symptoms of violent fever; and he died of plague before the end of the third day. You will find it mentioned, in the "Journal de Medecine" for May, 1811, that an Italian physician, or an Italian doctor of some kind, (called Dr. Valli), was so convinced of the non-contagiousness of the plague, that he mixed the matter from some pestilential buboes with a number of other things, and formed it into an ointment, which he designated his *pomade.* He rubbed this mixture on the eyelids of people who came to him with sore eyes; on the abdomen of others, &c.; and thereby communicated the plague to thirty individuals. He was quite sure that he was doing no harm whatever. The Turks, however, thought differently; for disapproving his practice, they cut off his head.

There are on record some other singular instances, of the denial of what it would appear almost impossible that any one would think of denying. Dr. Maclean, for instance, denied that plague was con-

tagious; and went so far as to explain why it, or any other disease, was ever supposed to be contagious. He says that the idea of contagion is merely a comparatively modern invention;—that it was neither more nor less than a popish trick of 1547. He would have us believe, that one of the popes, Paul the Third, in 1547, (after the death of our King Henry the Eighth, of *blessed* memory), when the holy fathers were assembled at Trent, finding he could not manage them,—that he could not get them to vote his own way, broke up the council by setting forth the idea of contagion:—that he stated there was a contagious disease in the town;—a disease that might be caught from those affected with it; and thus excited so much fear among the members of the Council, and all withdrew to Bologna. Thus was the celebrated Council of Trent dissolved. The holy men were so frightened at this invention of his popeship, that away they all went scampering to Bologna.

If you look into Boccacio's "Decamerone," you will find it was published in 1348; and contains a description of the plague at Florence. The first part of this work is not improper for me, a grave professor, to beg you to read; as it gives only an account of the plague. The stories of the "Decamerone" were told by a party, who retired from Florence some distance into the country, during the plague;—were told by some young gentlemen and ladies, who amused themselves by relating them. You will find Boccacio say, that the disease spread from the diseased to the healthy, as flames spread to an unctuous substance. Not only speaking and associating with each other produced it, but the clothes, or any thing else that belonged to persons who laboured under the plague, communicated it. He says, that even brutes got the disease, by touching the clothes of those who died of the plague. He says,—"I saw two pigs grubbing about the clothes of a man who died of the plague; they then staggered and fell down dead."—*Amendui sopra gli mal tirati stracci morti caddero in terra.* Now this was actually published in 1348; and yet a man would seriously have us believe, that the idea of contagion was invented in 1547.

However, some are more hardy than this. They will deny almost all sorts of contagion. There is a M. Lassis, of Paris, who denies all infections and contagions, except measles and lues venerea. But this is by no means a modern folly. I imagine that some of these persons have hoped to signalize themselves by advancing something original, when they denied this or the other contagion; and particularly that those who deny many contagions, or nearly all, must have thirsted for fame indeed. But they are too late. They are merely dull imitators; for many persons among the older writers have denied, sometimes one contagion, and sometimes another. You will find that Gadbury, the astrologer, says that the *plague* is not *more infectious* than the small-pox, scurvy, pleuritis, ague, and gout. He published in 1665; and his book is called "London's Delivery Predicted."

There can be no doubt that great mistakes have been committed,

on the opposite side, as to the contagiousness of particular diseases. You have seen that Dr. Fordyce and Dr. Cleghorn, both able men, believed that *ague* was contagious; and when speaking of *scurvy*, I mentioned that some contended, formerly, that that disease was contagious. We now know to a certainty, that neither ague nor scurvy is contagious. Again, on the other hand, some diseases were not supposed to be contagious, which we now know to a certainty to be so. It is by no means certain, from the writings of Sydenham, that he was aware that small-pox or scarlatina was contagious, or perhaps even measles. He may occasionally write as if they were, but he attributes them to other causes than contagion; and it is by no means clear that he was much impressed with the fact. But you will find other writers referring small-pox, and these other diseases, to all sorts of causes, instead of contagion; such as the faults of parents, before their children were born or proceated;—any thing, in short, rather than contagion. Mistakes, it must be allowed, have been committed on both sides of the question. Diseases not contagious were formerly supposed to be so; and diseases known now to be contagious beyond all doubt, were formerly, at different periods, not imagined to be of that nature; and therefore we ought to listen, with some degree of patience, to those who deny that this or that disease is contagious.

Typhus fever is a disease, which some deny to be contagious; and for myself I willingly confess, that I never saw an instance in which it shewed that character; but notwithstanding this, I cannot but believe that it is frequently a contagious disease. Such it has proved itself at the Fever Hospital. I do not recollect an instance of its spreading; notwithstanding I have been, for so many years, physician to St. Thomas's Hospital; where, of course, there is always a great deal of fever.* But it is to be remembered, that the majority of cases of fever which we have there, are generally by no means violent, compared with what I am told they are at such an institution as the Fever Hospital. We lose an exceedingly small number of cases of fever; either because persons are brought in in the early stage, when the disease is easily treated and cured; or because they are not desperate cases that, in general, people think of bringing to us. I hear, however, that to the Fever Hospital (which is a receptacle for this disease only) patients are taken, as a matter of course, when they have fever, whether moderately or desperately; and therefore many are so taken, of whom there is no hope that the disease will be cured. Our greater success, therefore, is owing, in a great measure, to the comparative mildness of the disease we are called to treat. Now this may be one reason why the disease does not appear contagious with us;—the emanations from the body are not of that extremely powerful kind, which they frequently are at the Fever Hospital; and it is not *all* our patients, but a very small

* The reader will bear in mind that these observations were delivered before the learned Professor had transferred his invaluable services from St. Thomas's, to the North London Hospital.

number, who labour under the disease. In the next place, we have extreme ventilation,—extreme cleanliness; and this is another reason why a *mild* disease, at any rate, will not spread. I have no doubt there is the same cleanliness and ventilation at the Fever Hospital; but they must be infinitely less efficient there; because *all* the patients have fever; whereas with us generally but one or two, and rarely more than three patients with fever, are in the same ward;—large as our wards are. There can be no doubt that, if typhus fever be very bad indeed, persons standing near the patient, even if there be good ventilation, may now and then contract the disease.

But with regard to the arguments in favour of typhus fever not being contagious, it is to be remembered that it is a disease, the contagion of which may be most easily rendered quite inert, by the dilution of ventilation; unless in some very *very* bad instances, on the one hand; or where there is a great predisposition to it, on the other. In the next place it is a contagion, which is allowed by those who stand up for its contagiousness, to be resisted exceedingly, if the body be in good health, and the person be in good spirits. But it appears to me, that there are instances, without end, of a person catching typhus fever from others. It is true, I have never met with one of these cases; but instances innumerable are mentioned, by those who see far more of the disease than I do; though I see quite as much as I wish;—perhaps about fifty cases in a year. You will also find, recorded in books, cases without end;—such as I cannot pretend to controvert. I understand, in regard to the Fever Hospital at Battle-Bridge, that every medical officer there,—physicians, surgeons, and apothecary,—have had the typhus fever; and some more than once;—that every nurse, every matron, every laundress, every housemaid, and, in short, every body that ever had any thing to do with the place, have all had it; and many officers have died. Yet nothing of the kind has happened at the Small-Pox Hospital, which is on the very same spot. This is very important, as clearing up the point, whether all these persons have had it from the emanations of the patients there, or from the situation of the hospital; for I see, every day, persons brought to St. Thomas's with typhus fever, from the midst of others who have the disease; but I never consider that any proof of contagion. The disease *may* have arisen, in my cases, from contagion; but the fact is not *proved;* for it may be the *situation* which has given rise to it. Some fault in the house, some drain, or other external cause, may have caused the disease first in one patient, and then in another. I never pretend to say that is not the case. For infection to be proved, the individual who communicates the disease must go from the place where he resides, to the spot where the healthy person is, and there give it to the latter. If the healthy person go to the sick person, and the sick person be still in the place where he was living when attacked, then no one can say that the disease, which the former contracts, has not been produced from the *situation*, and not from the *patient*. The disease *may* have arisen from contagion,—from the emanations of

the patient; but this is not *proved.* If the patient go to a healthy spot, especially from an unhealthy one, and the disease then occurs there in others; or if any thing which the patient has touched, be taken from the place where the patient resides, to a healthy place, and there the disease takes place;—then it proves, if there be a sufficient number of these instances, that the disease is contagious. Many persons who have caught the fever at the hospital, have carried it home and given it to others, who had not gone near the hospital. Whether, however, this were the case or not, there are instances without end of persons having visited patients with the disease, and then given the disease to others where they have gone.

Inanimate substances have become impregnated with the secretions, or emanations from a person labouring under a disease; and have communicated the disease to other persons. All such substances are called *fomites.* Among these, woollen substances are by far the most influential. All woollen substances imbibe secretions and emanations, and convey infectious and contagious diseases, far more than any other description of substance. You will recollect that, even in the case of malaria, some assert that bushes will entangle it; and, on cutting them down, persons have been seized with intermittent and remittent fevers;—arising, in all probability, from the disengagement of a considerable quantity of malaria, which had been collected. Even the cutting down of woods, will have the same effect; and therefore there is someting analogous to fomites, in the case of *malaria*; but it is in cases of *contagion* that, to inanimate substances, the term "*fomites*" is applied. There are instances, without end, of the plague having been conveyed simply by old clothes. It is even said, that the plague of London was conveyed to Derby by that means. There is scarcely any point in medicine, of which there are more numerous instances, than of plague and typhus fever having been conveyed by left-off clothes. The exanthemata are frequently so communicated; and when I come to speak particularly of yellow fever, I shall be able to lay some instances before you, in which this has unquestionably been the case; although it would appear, from the testimony of one whom I have the pleasure to call my friend,* that yellow fever is of different kinds;—that there are two kinds; one which is not contagious, and one that undoubtedly is so. I dare not say how long fomites will retain contagion. I know that a person who has been about another labouring under measles, will communicate the disease at the end of even a month; and that a room once infected with scarlatina, will give the disease for a twelvemonth. The contagiousness of fomites is best destroyed by heating them well.† Articles may be exposed to a high temperature; and large fires, with plenty of smoke, best disinfect apartments.

Whenever such a thing occurs, as disease being produced in a

* Dr. Stevens.

† The experiments of the late Dr. Henry, of Manchester, have placed this fact in a very strong light.

healthy spot, by the approach of an unhealthy person to a healthy one; or the application of fomites to a healthy person; then it is a proof of contagion, provided the instances be sufficiently numerous; for one or two cases may be quite accidental. But you will find an argument against the contagion of typhus fever, adduced from this circumstance;—that it will sometimes disappear during an extreme temperature; and will sometimes disappear altogether, without any obvious reason; whereas, if it were contagious (it is argued) it would spread from one to another; till all, or the greater part, suffered it. It is said, that it is only a disease which depends upon a particular state of the atmosphere; and not upon an emanation from a diseased person; and that *therefore* it is suspended by the extremes of temperature, or will suddenly cease without any obvious reason. It is indeed true that non-contagious yellow fever, and intermittent and remittent fevers, and other diseases decidedly not contagious, will be aggravated or repressed by extremes of temperature; and by causes not discoverable. But this is exactly the case, not only with typhus fever, but with diseases which all people of common sense allow to be contagious. Epidemic small-pox is frequently checked by extreme cold. The plague, which I believe almost every body allows to be a contagious disease, in the strict sense of the word, (not *infectious*, but *contagious*), is also stopped by extreme heat or cold. Small-pox is frequently so stopped; and also by the wind called *harmattan*, which also arrests the plague; and (what is curious) this wind will prevent persons from *taking* the small-pox, even if they be inoculated. When that wind prevails, inoculation is commonly found to be fruitless. We have, therefore, the same fact with respect to diseases undoubtedly contagious, or infectious, or both, that we have with respect to such diseases as our remittent or intermittent fever; or others which depend upon something in the atmosphere, not proceeding from diseased persons. This objection, therefore, has no force. Hooping-cough and measles, which most persons allow to be contagious, are generally checked at the height of summer; and Sydenham says that scarlatina is most prevalent when the summer is over.

But there are still more remarkable facts, with respect to the stopping of diseases known to be contagious;—nay, of some diseases which are, not *infectious*, but *contagious* in the true sense of the word. Cow-pock, which can only be communicated by contact, will sometimes decline so much that, at one period, Dr. Jenner could not prosecute his inquiries into the disease, for want of matter. Although there was apparently no reason for the disease not spreading as usual,—"in a natural way," as it is said,—from the teat of a cow to the hand of the human subject, it was sometimes so checked, that Dr. Jenner could not obtain a case of it. When he was publishing his work on the subject, the very same thing happened; and Dr. Woodville says, that the disease did not re-appear till the following spring, at which time it chiefly prevails. Sometimes, without our knowing why, small-pox (an unquestionably contagious disease) will not affect a place quite contiguous to another; although it is pre-

vailing in the one, and free intercourse is being carried on between them. Van Swieten mentions this; and Sir John Pringle says, that he saw small-pox carried by recruits into the camp; and yet it did not spread. Dr. Odier, of Geneva, inoculated children when the disease was not epidemic; and though they were going about the streets, every day, during the eruption of the disease, and although there was the freest communication between the children who had been inoculated and others, yet not a single instance was seen of the disease spreading. There was something in the atmosphere, whatever it was, that prevented it. Sir James M'Grigor says, that the small-pox was raging in houses at Bombay, contiguous to the barracks; and yet no child or adult in the latter place imbibed the disease. There was something in the situation which prevented it. If you will read Burkhardt's "Travels," * you will find something equally curious on this point. This author says, that "it is a curious fact, but one which has been attested to me by many persons, that small-pox has never been known to visit the Wadykenous; which is a narrow shore, from the Cataract up to Korosko." But, he adds, "this disease is well-known at Derr;" which is close by, and where it is much dreaded. It was never known to pass a certain point, notwithstanding there was free intercourse.

If such singularities will occur in the case of diseases known to be contagious, there is no reason to doubt that typhus fever is contagious, merely because it will suddenly cease in a neighbourhood, or in a district, without our knowing why; or because it may be apparently arrested by extremes of temperature. Not only will undoubtedly contagious diseases sometimes not spread in the natural way (to use common language) at certain seasons; but sometimes you cannot produce a disease, notwithstanding you inoculate for it. It would appear to be the same in the case of hydrophobia. We sometimes hear of nothing but mad dogs. A mad dog is killed every day;—sometimes for a month; and then we never hear any more of the disease for a twelvemonth. Now one would suppose that the disease would be communicated from one to another easily enough; but it is impossible not to imagine that, at one period, there must be a far greater susceptibility to the disease, than at another. You see, therefore, that there is no *à priori* objection, to the possibility of typhus fever being cantagious. The only question would be,—is it a fact, or is it not? And I think there are sufficient instances, —instances without end,—of persons having communicated the disease to others. Provided there is not free ventilation;—provided there is plenty of dirt, bad living, and unhealthy circumstances, I think there can be no question as to the disease frequently proving contagious. There is certainly a great difference of opinion on the subject; and it undoubtedly is not contagious to the extent that many believe; and great cleanliness, with plenty of ventilation, will so dissipate the disease, that no practitioner, if in good health and

* "Travels in Nubia," &c.

spirits, and well fed, need be afraid of it;—unless it exists in great intensity, and the emanations are applied to him in a concentrated state. In order to imbibe the disease, if the practitioner be in good health, and there is free ventilation, he must go so near to the patient, as to inhale his exhalations in full concentration; but if he be out of health, the disease intense, and ventilation indifferent, he may easily catch it. This must make a great difference in determining whether the disease is contagious or not; for you find ten thousand instances, in which the disease does not appear to be contagious; yet it is to be considered that, in these cases, if the bystanders had been predisposed by debility, &c., and there had been no ventilation, it might then have proved contagious. The question, however, must be determined by a great number of cases.

The interval which occurs between the application of the poison of typhus fever, and the appearance of the disease, is exceedingly various;—exactly as occurs in other diseases. Dr. Haygarth says that, of seventy-two persons who were exposed to the contagion of typhus fever, five were seized with the disease within ten days after exposure; thirteen were seized between the tenth and the seventeenth days; forty-one were seized between the seventeenth and the thirty-second day; and one so late as the seventy-second. This variation of interval, is the same as is observed with respect to all diseases acknowledged to be contagious. Hydrophobia is a disease which sometimes begins in a few weeks; sometimes in a few days; but generally a few weeks elapse, and sometimes several months, before it makes its appearance. The same variation is observed in the case of small-pox; nay, there is often a difference (as I have mentioned already) as to the time at which this contagion takes effect;—depending upon whether it is applied by means of the atmosphere, or in a palpable form by inoculation. The poison from inoculation, produces the disease much sooner than infection;—much sooner than if the poison be applied by means of the atmosphere. How long the poison may lie dormant, I cannot say; but to take a case from another poison,—malaria, we must remember that many months frequently elapse before ague is produced; so that the malaria becomes the *predisposing*, instead of the *exciting* cause; and the same may be the case, sometimes, with respect to typhus fever. It may exist dormant for a length of time; but what is the utmost period it will do so, I cannot pretend to say. It must have a limit, of course; but we know not what that limit is.

An objection to the contagiousness of typhus fever has been raised, not only from the irregularity of the period at which it begins, but from the irregularity of the duration of the disease; yet scarlatina, although undoubtedly a contagious disease, is very uncertain as to its course. Scarlatina will, in different instances, show the eruption at very different days. Sometimes the eruption will appear on the first day;—the very day on which the patient is taken ill; and sometimes it will appear before there is the least redness or soreness of the throat. Then, when the eruption *does* appear, it will some-

times last only a day, or a day and a half, or two days; and sometimes it will continue ten days. No valid objection can be raised to the fact of typhus fever being a contagious disease, merely because it is very various, not only as to the period at which it takes place, but also as to its duration; for scarlet fever likewise exhibits these very same varieties. Nay, the same would also appear to be the case with regard to small-pox; for Sydenham speaks of an epidemic small-pox, in which the eruption took place on the fourth day; which, you know, is not the usual period at which it occurs.

But although the contagion of typhus fever is rendered much more active by concentration, and both that and filth are injurious to a patient, and must render him more liable to be affected by the contagion, yet it frequently happens, that the utmost filth and the greatest closeness, will not produce the disease. Some have ascribed the disease to confinement of air and to filth; and both these will unquestionably be injurious to the health at large; and contribute to render a person exposed to the contagion of typhus, the victim of the disease; yet persons are continually exposed to mere filth and confinement, who do not suffer. In Kamschatska, the people live seven months in the year in *yourts;* which are cavities dug seven or eight feet under ground, and covered with a thatched roof; and which have only one small apartment, for three families perhaps; with a stock of provisions, consisting chiefly of dried putrid fish. In these pits they eat, sleep, and do every thing promiscuously; so that there is the most intolerable stench; which, though not perceived by themselves, is but too evident to travellers. Yet they have no fever. On the contrary, they are all healthy; with the exception of being liable to scurvy, which arises from the want of fresh provisions. The Greenlanders and Esquimaux crowd themselves together, and exclude the air. They have no chimneys in their huts; but an inner apartment, the fog and smell of which are quite suffocating to strangers. Yet they very rarely have fever. In general, they only experience scurvy. The habitations of the Russian boors, are equally intolerable to strangers; and yet, it is said, they never have putrid diseases. Dr. Lind says that, in the slave-ships crossing the Atlantic, although the poor creatures are crowded below deck as much as possible, and at night are shut up under close hatches; and although they suffer from a change of climate, and some are suffocated; yet, in general, they have no infection; and if an accidental infectious disease enters among them, it is of a much milder character, than when it occurs in felons who have been transported in an opposite direction;—owing, probably, to the opposition of a high temperature to the contagion of typhus. It is said (but I do not know with what degree of truth) that contagious fever never occurs in these slave-ships. At the black-hole in Calcutta,—an apartment forming about a cube of eighteen feet; and only opening to the west, by two windows strongly barred,—one hundred and forty-six persons were confined (in the month of June, 1756) from seven or eight o'clock in the evening till dawn the next day. One hundred

and twenty-three individuals were suffocated; and the rest were of course made ill. It is said, however, that all which the survivors afterwards felt, was heat and extreme exhaustion; and that a great many had boils, but no fever was produced. Howard, the philanthropist, says that there was no fever in the prisons at Venice; though they were the closest possible. He also says, that the prisons at Naples were close and offensive; that the people were ill; but that no fever was produced. He adds, that we must look for an additional cause of fever, than mere filth and confinement. Dr. Mounsey says exactly the same of the prisons at Moscow and Petersburgh; though the prisoners were crowded together, and had but little ventilation. But it is to be remembered that, when fever is introduced into such situations, it rages with the most dreadful violence; and it is also found that new-comers into such filthy places, when contagion is present, suffer much more than those who have been habituated to them;—that contagion acts the more, on account of the bad state into which this filthy confinement throws the constitution. Those that were habituated to these situations, before the contagion was introduced, became gradually accustomed to it. People every day live in confinement and stench, which would half poison us; but when strangers go into this filth, after having been in pure air, they are much more liable to experience the disease; and if they suffer, it is worse in them than in others. Still although, till certain contagions are introduced among people who live in close, dirty, and bad situations, they consider themselves as well as others differently situated; yet when those contagions are introduced, they at once act as a test of the tendency of the previous mode of life; and these people suffer in an infinitely higher degree than others; provided there be not present any accidental counteracting cause; such as great heat in the case of typhous contagion. A mere surgical accident will test the previous mode of life, in two people who might have appeared equally healthy.

As mere confinement will not, in general, produce fever, without some predisposing cause, so dead putrid animal matter is also said to be innocuous, while unaided. An instance of the latter is adduced with respect to Paris. In the course of six centuries, there were six hundred thousand bodies buried in Saint Innocent's churchyard, in that city; and they were spread under ground over two acres. The soil, by this vast deposition, was raised above the streets; and of course there was an offensive smell; but no fever arose from it. They were removed partially, in the heat of summer, till the ground was levelled; and the workmen were frequently asphyxiated,—frequently fell down senseless; but none of them were attacked by fever, although no precaution was employed. It is said that, in Seville, there is a fetid odour from the ground where ten thousand bodies were deposited, during the time of an epidemic; that the soil cracked, and great stench was produced, but no fever. Howard, the philanthropist, says that, at Smyrna, there was a most horrid smell from the burial-ground, after the plague; and many corpses

lay uncovered; but no bad consequences ensued to the family of the governor, whose house was exposed to the exhalations from the spot. Disecting-rooms will not produce fever; unless an individual be either exposed to contagion, or is very much out of health through anxiety of mind, hard study, or some accidental circumstance. Persons attending a dissecting-room, will become out of health, and be ill, and perhaps die, from the very severe effects of slight wounds; bnt I am not aware that fever which will spread to others, has ever been produced in this way. Various diseases which have been confounded with fever, have been produced; but I am not aware that fever itself has so occurred, when there was no depressing passion,—no anxiety from over study, want of proper rest, or excess of any kind. Still if mere stench, unaided by other things, and through delicacy of constitution,—not counteracted by the presence of the ordinary causes of health,—should impair the latter, I can conceive that fever may be produced at last. Nightmen, as far as I know, are as healthy as other persons; and yet their grounds are certainly offensive enough. A spermaceti-manufactory, the stench of which was intolerable, existed near Bristol for two years; but no fever was produced. It is said that, at a manufactory (situated at Oldland, in Gloucestershire) where bones were employed for the purpose of procuring muriate of ammonia, an intolerable stench was produced; and yet no fever resulted from it. It is said that the superintendant removed to a more convenient house, situated upon a hill; and that there he and his family lost their health; so that he had some idea of returning back to the offensive place, that he might recover his health. At sugar-refineries, where blood is kept till it is putrid, persons do not suffer. Leather-dressers are exposed to offensive smells; and yet they escape. Many persons are employed in the most offensive occupations with putrid animal matter; and yet fever never breaks out amongst them, if they possess the general means of health, and are well fed and cheerful. But if these persons, in the midst of stench, were in a state of famine, and consequently in great depression of mind, then in all probability fever would occur. Those who are interested particularly with this point, will immediately remember the examples adduced by Mr. Thackrah, in his work on the diseases of the different occupations of life. Butchers are exposed to more or less stench; glue-manufacturers, buckram-makers, and tallow-chandlers, are all exposed to odours more or less offensive; and yet they enjoy excellent health;—are ten times more healthy than bakers. Orfila mentions the healthiness of knackeries, where there is immense putrefaction in summer, and the soil has been saturated for years.

To shew that these exhalations do not hasten the decomposition of even dead animal matter, the following fact is mentioned. In the neighbourhood of a dissecting-room behind the Hôtel Dieu, where the odour was so offensive that, after numerous petitions, the dissecting-room was removed, ragouts, bouilli, and all sorts of good things, kept as sweet in the midst of this horrid smell, as in any other situa-

tion. A veteran of the imperial guard (to mention another instance) turned gut-maker; and said that, although his premises were truly offensive,—filled with enormous masses of corruption, yet nothing spoiled in his house. It cannot be denied, however, that although these things do not generate fever, yet they operate strongly when other causes come into play. Though they may all be thrown off, as water is from an oiled surface, when a person has no other cause of ill health, and is well supplied with good food, and has good spirits, yet they do produce mischief when other causes are combined with them. It is also to be insisted upon, that if actual contagion be introduced into a place which is offensive, then these things appear to tell; and the mischief is greater, on account of the closeness of the situation, and the exhalations from the putrifying animal matter.

It is therefore certain, I think, that mere confinement,—mere exposure to the emanations from persons crowded together amidst the greatest filth, will not in itself produce fever. I think it is quite certain that animal matter, in the greatest state of putrefaction, does not of itself afford any thing which will produce a disease called contagious. It may be that the persons so exposed are fed well; and are in good spirits; and have all other means of contributing to health at their command. Still, however, if any matter which is in a state of putrefaction; as is, or was formerly, the case in dissecting rooms; as occurs in ammonia-manufactories, and manufactories and places where putrid blood is used, and from which there are horrid emanations;—if this alone could produce contagious diseases, we should have fever every day, where we have nothing but perfect health. There can be no doubt that, if these things throw a person out of health, then any contagion, or any other cause of fever, will act intensely in producing this disease. This is allowed with regard to cholera. Nobody believes that any putrid emanations, or any thing that proceeds from persons crowded together, or the putrefaction of animal matter, will produce that disease; but all know that these things have a tendency to throw people out of health; and by the body being thus brought into an unnatural state, it is rendered an easy prey to any other causes that are applied.

There is another question, whether the contagion of typhus (allowing that it is a contagion) may be generated afresh? There is no *proof* that certain contagions can be generated afresh; but others unquestionably may. Want of good food, want of rest, closeness of situation, depression of spirits, and exposure to bad air, may, by all conspiring together, occasion fever; but whether they occasion *contagious* fever, I do not know. I have never seen an instance of it. I have seen many young men ill from close studying, from being much in a dissecting-room;—especially when they came fresh from the country, and were not accustomed to a dissecting-room, or to hard study; and were very anxious about their studies. Young men, when about to pass examination,—their anxiety being then so much the more increased, have certainly had fever; but I never

saw their disease spread contagiously. Others say that they have seen it spread in such circumstances. They tell us that typhus is a disease, the contagion of which may be generated *de novo;* but, though this is highly probable, yet one should always be cautious in listening to assertions in medicine; because so many assertions are made, without any ground whatever.

With respect to confinement, persons have been crowded together in the most filthy prisons, where the discipline was frightful; where they were treated like beasts;—in a way that *we* should not think of treating beasts; and yet no fever was produced. But you will find, in authors, an account of a disease which broke out at Oxford, in the year 1577, in the reign of Queen Elizabeth; at what was called "the black assizes." Some prisoners were brought out of prison, where they had been in a state of great confinement, with very little ventilation, and exceedingly dirty. A strong stench arose, and was supposed to proceed from the prisoners. Some of the judges and magistrates, the sheriff, and most of the jury, were taken ill; and died in a day or two. Six hundred persons sickened the same night; in the next three days, three hundred more sickened; and before five weeks had elapsed, five hundred and ten had died. The symptoms are said to have been violent pain of the head and abdomen, with delirium. Many contended that this was a disease produced by the confinement of these prisoners;—that a contagion was generated from them;—that although they did not suffer themselves, a contagion passed from them, and produced this disease. But others, of equal judgment, are of a different opinion; and urge, on the other hand, that the disease was not contagious. It is said that the court was held in the yard of the castle, that was only a small distance from the river Isis, the banks of which were low; and it is actually recorded that a great damp arose; that a *breath*, as it is called, or a *fog*, arose among the people; and that, at the same time, an intolerable stench was perceived; and some seemed smothered. The weather was intensely hot. The disease was not the plague; and the physicians would not name it. From all these circumstances, some writers contend that the disease had nothing to do with the prisoners; but that it was an exhalation owing to the dampness of the earth;—some peculiar kind of exhalation; that we have no proof of its contagiousness; and that typhous contagion rarely affects so instantaneously. Women, children, and poor people, are said to have escaped. How this may be I do not know; but to shew the bigotry of the times, I may mention that others took up a very different opinion; and alleged that it was neither contagion nor exhalation; but entirely owing to the poor Roman Catholics, who used the art of magic. They stated that it arose from diabolical and papistical arts;—that it was produced by popish blasts, which emanated from the lowest depths of hell. You will find this particularly mentioned, in Wood's "History of Oxford."—"Some have thought, and do think, that it was devised by the Roman Catholics, who used art magic in the design; and that also,

as a certain note witnesseth, (register of Merton College), it sprung *ex artificiosis, diabolicis, et plane papisticis, flatibus; e Lovanensi barathro excitatis; et ad nos scelestissime, et clam emissis.*" This absurd opinion seemed favoured by the circumstance, of the damp or fog having arisen in the court, as soon as sentence of loss of ears was passed upon a book-binder; who had continually spoken against Elizabeth's government, and the reformed religion.

Another singular instance is recorded, which occurred at the Old Bailey in 1750; where several persons were taken ill, after the prisoners had been brought into court, subsequently to close confinement. This has been supposed to be exactly a similar instance, but it appears that there are objections to it; and many contend that it arose from a window being open, and a draught of air coming on those who suffered. How this might be, I do not pretend to say; because there are ten thousand circumstances that would alter one's opinion, if we had an opportunity of making minute inquiry. I can only state my belief, that typhus fever is sometimes contagious; that it may be made so under very unfavourable circumstances;—that it is, perhaps, always contagious in one sense; only that the contagion is so mild and diluted, that it comes to nothing; and that it belongs, like cholera, to those contagions which are not only powerless by moderate dilution, but powerless upon a frame free from disease, in full vigour, and with all or most of the causes of good health about it. We know from Thucydides that, before the plague of Athens,—from Livy that, before the plague of Rome,—and from Hodges that, before our plague in 1665, great crowds were collected in each respective city; that, in the latter case, the sky was serene, and the air stagnant; and that the rich escaped so much, that the disease is said by Clarendon to have acquired the name of "the *poor man's* plague." Whether the contagion can be generated afresh, I will not pretend to assert; but I believe that it may. If a person be near another labouring under typhus, and a considerable time afterwards is exposed to fatigue, and other predisposing causes of fever, and is seized with it, we cannot say whether the contagion has lain dormant all the time; or whether the mere force of the predisposing causes alone may have produced the disease. Either side may be adopted, and neither disproved.

I ought to mention that the bodies of persons dead of typhus, rarely (if indeed ever) give the disease; and that typhus, like other epidemics, whether contagious or not, grows milder and milder the longer it lasts; although it be spreading more and more. I may just mention, by the way, that besides *malaria* being a cause of *remittent* and *intermittent* fever; and besides *contagion* being a cause of *continued* fever, it is very possible there are certain other exhalations, which do harm;—which produce actual disease, I mean. Sydenham had an idea, that epidemics arose from some peculiar changes in the bowels of the earth. It was only a fancy of his; but it is very possible that some of these peculiar causes of disease, are exhalations let loose from particular spots. Berzelius mentions a

curious circumstance. He was making experiments with seleniuretted hydrogen; and after a certain period (not immediately) catarrh came on, and continued a very great length of time. A quantity which he inhaled, while making the experiment, did not produce any great irritation *at first;*—he did not suffer any *immediate* inconvenience; but after a certain period had elapsed, then it began to operate, as all specific poisons do; and he had long continued catarrh. Now some, from such facts as these, conceive that a volcano may let loose a substance, capable of producing a peculiar operation on the human body. It is not altogether improbable that exhalations, of various sorts, may arise *out* of the earth, independently of the exhalations of diseased animal bodies, and independently of the exhalations, from the *surface* of the earth, of putrifying vegetable matter. The subject is not at all understood; but it is certainly an inquiry worthy of being attended to, whenever an opportunity occurs.

Having considered the *remote*, we next come to consider the *proximate* cause of fever; respecting which, there have been, I might say, thousands of hypotheses. In these hypotheses, the writer has generally assumed some one fact which has had no existence; or has taken up one particular circumstance, from among all the circumstances of the disease, and placed that as the cause of the whole. Some assume it as a fact that the disease is all in the solids; others assume it as a fact that it is all in the fluids. Those who ascribe every thing in a disease to the fluids, are said to be *humoral pathologists.* Their fancy is this;—that a certain something is in the fluids, which is deleterious to the body; that a process, analogous to fermentation, is going on, which they call *concoction;* that the peccant matter is then separated, and the process is called *despumation;* and provided it is thrown off entirely, there is an end of the disease. Now there is not the least proof of any such process occurring. There is proof of the depravation of the fluids; but there is no proof of concoction and despumation;—of a salutary fermenting and despumatory reform of the fluids,—if I may so speak. There is nothing peculiar thrown off, when an excessive secretion takes place; as at the crisis when great diarrhœa or sweating occurs; or at least, if there be, we know it not; and it is a mere fancy to say that it does occur. So when there is hæmorrhage, there is no proof that that portion of blood which exudes, is more vitiated than the rest; and it is to be remembered that it is only a *part* of the blood which escapes. All these changes of the fluids are, most probably, owing to the solids in the first instance. A morbid cause makes a peculiar impression upon the body, as a living system; it impresses the solids; and, by the operation of the solids, the fluids are secreted in a vicious manner, and of a depraved quality. It is probable that the vitiated state of the fluids, arises from the solids not having manufactured them properly; unless, indeed, a quantity of improper materials be supplied to the body; which the body, without any fault of its own, can make nothing of. In that case, the solids certainly are not in

fault; they do their best, but they are obliged to manufacture (if I may so speak) a bad article; because they have bad materials. With this exception, I imagine that the fluids must become depraved through the solids; though of course they, in their turn, must exert an evil influence. Again, it is a fact that fever will continually cease, without any discharge;—without sweating, or diarrhœa, or loss of blood at all. It is most probable that, when these things take place, they are the result of the healthy change altogether. In fever, you may get a patient to sweat profusely; but perhaps he will not be any better for it. If, however, you get him better, then probably he sweats. His improvement is not the result of the sweating; but you have brought him into an improved condition; and sweating then takes place spontaneously, as it were. Frequently, in fever, diarrhœa occurs without any relief; you stop it, and the patient is all the better for the suppression. The critical discharge, too, when it does occur, and when a patient is improved at the same time, is for the most part too small to explain the improvement. It would seem that the discharge is rather the *consequence* of the improvement than otherwise. The improvement occurs; and the discharge takes place, almost as a matter of course.

Some have imagined that, in fever, the blood is too thick;—that it will not flow; but that is a mere assumption. Other authors have asserted, that the affection is owing to a spasm of all the small vessels. I presume that there is spasm in fever;—that so long as the solids do not secrete, we must suppose that the vessels are closed, so that the fluids cannot escape; but though there be spasm at a certain period, when the secretions are all deficient,—though we allow that this is *one* striking circumstance, yet there is no reason to imagine that it causes *all* the symptoms. Then some have assumed that debility is the cause of fever; but people are weak enough every day without having fever; and if debility be *one* of the circumstances of the disease, yet there is no proof that debility is the *cause* of the symptoms.

Then, again, some assume that it is inflammation. Some will say that it is a universal inflammatory state; while others contend that it is only a *local* inflammatory state; and some maintain that this local inflammatory state is situated in one part, and some in another. Now that the body, in fever, is frequently in an inflammatory state throughout, there can be no doubt at all; neither can there be a doubt that in fever there is continually local inflammation; but there certainly is something more than all this in fever. You have a peculiar feeling of debility; you have a peculiar look of countenance; you generally have pains, at the first, in the loins; you have a tremulous tongue, and a universal disturbance, such as you will not have from any simple local inflammation in any one part. Many of these symptoms are certainly not referable to an inflammatory state; and if the disease be contagious, then this shows that there is something more than mere inflammation. The local inflammation which occurs, is by no means proportionate to the violence of the

fever. You will frequently have violent fever; and, although there is local inflammation present, yet the latter is not at all in proportion to the former. In some instances, you will have death take place at the very first, without any inflammatory state being produced;—just as in small-pox (which unquestionably is a contagious disease) you will sometimes have the patient die, before any inflammation becomes visible;—death taking place merely from the depressed state of the system. Mere inflammation, whether general or local, although it is a circumstance that frequently occurs in fever, is nevertheless quite insufficient to explain the whole of the symptoms. It is *one* fact in the disease; but not the *whole* of the facts; nor is it a fact from which any one can prove that the other set of symptoms arises.

With respect to those who consider that it is neither situated in the fluids nor the solids generally, but in some one part of the body, I may mention that Hoffmann thought it was a disease of the nervous system. The nervous system certainly is affected, and so likewise are the secretory organs; and therefore others have just as much right to say that it is a disease of the secreting system, as Hoffman had to ascribe it to the nervous system. Dr. Wilson Philip supposes it to be an affection of the capillaries throughout the body; but then there is a peculiar affection of the nervous system in general; and there is particularly a disturbance of the abdominal organs. Some have fixed upon inflammation of the brain. Former writers have done that; and a modern physician, in London, has done the same; he considers it a mere inflammation of the brain.* Others, again, residing in Paris at this moment, fix upon the abdomen. Broussais, for instance, considers it to be inflammation of the stomach and bowels;—what he calls *gastro-enteritis*. Some patronize one organ, some another.

Now I believe, as I just now mentioned, that the head is frequently in a state of inflammation, and so is the abdomen; but occasionally the head is far more affected than the abdomen; and in other cases the abdomen is more affected than the head. I stated that the local inflammation frequently bore no proportion to the general symptoms of fever; and sometimes we have violent local inflammation; without any corresponding symptoms of fever. The same is the case with regard to the relative affection of the head and the abdomen. Sometimes the head is more affected than the abdomen, and *vice versâ*;—they do not bear any proportion to each other. If we assume local inflammation to be the cause, and if we observe the phenomena of many cases, we have no more right to settle the affection in the head, than we have in the abdomen. Frequently you will find the disease running on, and proving fatal, without any decided marks of inflammation at all;—without anything that bears a proportion to the general sinking of the system. Besides, there are peculiar symptoms in fever, which mere inflammation would not at all explain; such as

* See "An Enquiry into the Seat and Nature of Fever; by Henry Clutterbuck, M.D."

the particular look of the face, the tremulous tongue, and the extreme feeling of debility of the body. Again, it is to be remembered that the fluids do, in fact, undergo a peculiar change. As the disease advances and the debility goes on, the saline matters of the blood are more or less deficient; and the blood becomes more and more watery. It is said by a friend of mine, Dr. Stevens, that we can remedy this state, not by the remedies for inflammation, but by supplying the deficient substances in the blood. Of that, however, I shall speak presently. All these I consider to be mere circumstances constituting a general collection of truths; but I do not see any reason to suppose that there is disease of one part, more than of another.

Some think that inflammation will explain every thing;—not only changes of structure (upon the absurdity of which supposition I have already dwelt); but every thing else that occurs morbidly to the body. It certainly is the first circumstance that takes place in many changes; and it *accompanies* many changes; but there is no proof that this is *always* the case. Syphilis, for instance, is an inflammatory disease. The first thing that occurs, is a pustule, or a mere inflammatory speck, followed by ulceration; and the next occurrence is an inflamed gland; and then, when other symptoms arise, they are more or less inflammatory. If you bleed during the secondary symptoms, you often find the blood buffed; and you have inflammation in different parts of the body. Syphilis, however, is something more than inflammation. So it is with cancer, so it is with encephaloid disease, and melanosis; and so, I think, it is with fever. Inflammation forms a part of a large number of cases; but it is not sufficient to explain them; otherwise a mere case of phrenitis would be, in every instance, a case of fever; and every case of inflammation of the stomach, or of inflammation of the bowels, would, if there were a certain degree of excitement, be a mere case of fever; which undoubtedly is not the case. Another argument against fever being mere inflammation is, that it is frequently cut short, in a very early stage, by an emetic; or by cold affusion;—not ablution, but affusion. Now this could not be done, if the disease were nothing more than local inflammation; or if it were inflammation at all. Again, inflammation will not explain the difference between typhus fever and plague; which, though different diseases, are nevertheless in many respects analogous. Inflammation will not explain scarlet fever; nor will it explain measles; yet they are both inflammatory diseases. The symptoms are decidedly those of inflammation, in a great number of cases; but there is something more than that. The system is in a peculiar state; and inflammation is merely one of the circumstances. Some have imagined that inflammation produces even intermittent fever; but we have no explanation of it; and this is a mere assumption. Anything may be said in physic; but anything may not be right.

Although I deem it necessary to make these remarks, yet I shall not attempt to state what I believe fever to be. I really do not know what it is; and I think it is always a great blessing to know one's

ignorance. It is a great blessing not to fancy ourselves acquainted with things with which we are not; because if we fancy we are, we sit down contented, and never think of examining the subject further. It is a great point in study, I think, to ascertain whether we really do understand a thing or not; and not to deceive ourselves by fancying that we are fully acquainted with it, when we are in a state of perfect ignorance. You will find an excellent observation of this kind in Voltaire's "Philosophical Dictionary," under the word "*idea*." A person is there represented as lamenting, that he has got so many ideas;—that his cerebral matter is full of ideas; but that he is perfectly miserable, because he cannot tell what an idea is. He fancies it is this, that, and the other; he indulges first in one hypothesis, and then in another; and says it is a shocking thing not to know what an idea is. His friend tells him, that it is a much more shocking thing to sit down contented with imagining that an idea is what it is not.—"Il est bien triste d'avoir tant d'idées, et de ne savoir pas au juste la nature des idées." "Je l'avoue," replies the other; "mais il est bien plus triste, et beaucoup plus sot, de croire savoir ce qu'on ne sait pas."—I imagine that we do not know the peculiar state of the system in typhus fever; any more than in measles, or hooping-cough. A peculiar cause has operated upon the body; and a peculiar state has been thereby induced; only the *effects* of which we can observe.

Notwithstanding this uncertainty, however, the *treatment* of fever is in the highest degree rational; and in the highest degree successful. We must aim, in the first place, at having free ventilation, and the most perfect cleanliness;—plenty of washing, plenty of clean linen, and plenty of fresh air. With fresh air and fresh water, we may go on very well; but if there be any smell, which ventilation and washing will not remove, the chlorides (I need not say) are excellent things. They should be sprinkled upon the bed, or upon the floor; disposed in saucers, or in rags dipped in the solutions, and hung on the backs of chairs about the room. A solution of the chloride of lime, ought to be put into the utensils which the patient employs; that no unpleasant smell may arise in the room;—no contamination. When you first see a patient, if he be dirty, before prescribing anything else, it is right to prescribe soap and water. Before anything else is done, I would always have a patient got perfectly clean. When he is well cleansed, with soap and water, all over his body; and especially his lower half, and his lower extremities,—a portion which is sometimes exceedingly filthy,—you should have him well washed with plain water, several times a-day. Soap is no longer required; but sponging, several times a-day, is always of importance. I believe it is always safe, in fever, to wash a patient with warm water; but if he say that he is hot, or if (when you place your hand upon him) you feel that he is hot, you may employ cold water.

If the temperature of the patient be steadily above 98°, as ascertained by a thermometer placed under the tongue, or placed in the axilla; if there be no pulmonic affection;—no general profuse sweat-

ing;—and the patient himself does not say that he is chilly;—you may take him out of bed, and throw a pail of cold water upon him. This, of course, is cold affusion; and may be repeated. The patient must be dried, and put to bed; and as soon as he grows hot again, the same measures may be adopted. This plan makes him exceedingly comfortable. Frequently it induces perspiration; and frequently it sends him to sleep; but even if it fail of this, it nevertheless makes him very comfortable, and sometimes cuts short the fever. Upon this subject you should read Dr. Currie's "Medical Reports."* But in general I do not find the heat steadily above 98°;—I do not find patients free from a certain degree of chilliness; and I therefore content myself with tepid or cold ablution. I have never had occasion for affusion; but it is always safe, under the restrictions I have laid down. The cold bath is too chilling a thing;—it would strike too suddenly. But when it would not be safe to take a patient out of bed, and throw cold water upon him, you may always have recourse to ablution, either cold or tepid. I always make it a rule to consult the patient's feelings on this point; and if I think he cannot bear much cold, I have him stripped, and sponged all over with tepid water; and between the intervals of this treatment, basins of cold water should be brought to the bed-side; and he should be allowed to put his hands into them as often as he thinks proper; and his face, too, should be continually washed. If there be any pulmonary affection, or if the patient say that he is chilly from the ablution, then you should use it tepid; for I need not say that tepid ablution is a great source of relief; and that it cools the patient considerably. It does not produce the impression that is made by cold water; but a great degree of evaporation takes place; and it extracts a certain portion of the patient's temperature. When it is applied, its temperature need not be 98°. From 80° to 90° is sufficient; and it cools the patient by its subsequent evaporation.

To co-operate with this treatment, the patient should have but few clothes upon him; and the windows and doors should be opened; so that he may have not only a free ventilation, but at the same time a cool temperature. The doors and windows should be wide open; unless the patient feels chilly, or the draught seems too strong for him. As the disease lasts longer, you must apply cold less. You will find that there is not the same power of generating heat;—that the patient is not so hot as before; and therefore the application of cold is less advisable; and you find it necessary to use *tepid* ablution, where previously you used *cold*. Indeed, as the disease advances, and the patient is getting better, there is little occasion for much abstraction of temperature. You find ablution, whether warm or cold, less and less frequently wanted; and you find a low temperature less and less required. But while, in general, ablution is employed for the purpose of *cooling*, it should still be partially employed for the purpose of *cleansing*. The hands, the feet, and the head, ought

* "Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Fever, and Febrile Diseases; by James Currie, M.D., F.R.S."

to be looked after. With regard to the temperature of the room, the same rule is to be observed as at the beginning; that is to say, the patient's feelings ought to be consulted. If he be delirious, of course you will not attend to him, but judge for yourself; but if he be not delirious, and say that the temperature of the room is unpleasantly cold, then you ought not so freely to diminish it.

While you thus attend to the surface of the body, you likewise have to attend to the inner surface;—to the alimentary canal. It is a good practice, in the beginning, to give an emetic; but if you find tenderness of the epigastrium,—if you find tenderness on making pressure on any part of the abdomen, I would not have recourse to any such measure. If, indeed, there should be a violent determination of blood to the head, I do not know that I should have recourse to it then. Frequently, however, in the beginning of fever, it is an excellent practice to give an emetic;—for instance, a grain of tartar emetic, with a scruple of ipecacuanha; but I should never think of giving it, without first ascertaining whether the abdomen was tender on pressure or not. Sydenham gives very good advice on this point. He advises us to premise bleeding, before we exhibit the emetic. This practice is not always necessary; but if the pulse were full, and there were great signs of a determination of blood to the head, I would bleed first. But whether we give emetics or not, there is no doubt of the propriety, in every case of fever, of seeing that the bowels are regularly opened;—that no filth collects in them, any more than on the surface. They should be freely opened, for the most part, every day; at least at the *beginning* of fever. If they be confined, one of the best things is a large dose of calomel. The quantity must vary from two to five, ten, fifteen, or twenty grains, according to circumstances; but for the most part, five grains of calomel, followed by castor-oil every two hours, will answer every purpose. Now and then you will have obstinate constipation. A patient may not have had a good stool for many days; and then you may give ten grains or a scruple of calomel, and follow it up by castor-oil; but it would be wrong to give a dose of that description, if there were every probability that a few grains would answer the purpose. Nothing is better than to follow it up with castor-oil; but at the same time, I need not say you are likely to accelerate its operation, by giving a common injection. This, however, is not to be done if the bowels be sufficiently open of themselves;—if they be open once a day. Sometimes it will happen that they are *too* open;—that there is the *opposite* state, that of excitement; and then, of course, purgatives would be highly improper. The purgative plan, when necessary, is of course to be put in practice at the *onset;* but, in regard to ablution, I have stated that I would continue it during the *progress* of the disease. Calomel certainly does clear out the disease better than any thing else; although it usually requires another purgative to set it off. But although you clear out the bowels well in the first instance, by means of calomel, you nevertheless often find it a good practice to go on with smaller doses of that

medicine, or other preparations of mercury, during the course of the disease. This will generally prove quite sufficient to keep the bowels open, without any thing in addition; but if from two to five grains, exhibited every eight, six, or four hours, do not effect that object, you must accelerate the action of the mercury, from time to time, either by an injection below, or by a moderate dose of castor oil. Senna and salts are given by some practitioners; but, upon the whole, I think castor-oil is best. Indeed, if the stomach or the intestines be irritable, we ought not to do more than give an injection. Accumulation and torpidity, however, do not always exist; for sometimes we have diarrhœa, and the whole of the abdomen is tender; and of course purgatives, under such a state, are likely to do more harm than good. It is right, before debility arises, to have one, two, or three stools a day; but, if they take place without medicine, and be of a watery character, it is necessary to restrain them, lest the patient should sink. As a general rule, where there is no irritation of the bowels, or much real debility, we ought to make a point of procuring two or three stools a day. There is no rule for the dose of calomel; but if you give mercury in small and repeated doses, it generally keeps the bowels in an open state; sometimes, indeed, more open than you wish.

The use of purgatives in fever is very great; but undoubtedly it has been exagerated by certain writers.* You will find, if you consult some books, that you have only to turn the patient inside out, in order to cure him; but I am quite certain that such is not the case. Within the last two or three years, there has been found a great disposition to diarrhœa, which it has been absolutely necessary to restrain; but no one can dispute the propriety of removing all filth, once or twice a day, from the alimentary canal. Costiveness ought never to be allowed; for it causes the tongue to be brown and dry; and, except in the last stage of fever, where there is frightful debility, you ought to have one stool in the twenty-four hours.

Small doses of mercury, with the rest of the treatment already mentioned, will enable you in the greater number of instances to get rid of fever;—such, at least, as I see. In other cases, however, it is necessary to be more active. It is necessary to take away blood; and you may do it either at the arm, or by what we call *local* means. Venesection is certainly not required for mere generally increased action. If no organ in particular be suffering;—if you cannot discover great excitement of any one organ;—if there be mere general excitement of the system; I do not believe that venesection is required. However, if you know that the epidemic is of such a character, that inflammation is sure to come on, it is as well to bleed in the arm; to prevent such inflammation, when it does come on, from being so violent as it otherwise would. But, as a general rule, in the fevers that I see in London, venesection is not demanded in one case out of thirty or forty. It would be wrong for me to speak of what people see in other places; because fevers differ

* See Dr. Hamilton's celebrated work on Purgative Medicines.

in different situations. In the country, where people are strong and plethoric, and in hot countries where the excitement is sometimes exceedingly great,—the congestion within the head, chest, or abdomen, very considerable,—the lancet is the "sheet-anchor;" whereas, in the majority of continued fevers which I see, venesection is certainly not necessary; and I am sure that those who employ it extensively in this disease, if they do not destroy their patients, yet protract their cases. However, you will find it of great importance to employ *local* bleeding; and, except in hot countries, I think every good may be obtained from it, in the majority of cases, without that shock which *general* bleeding produces; and which is very desirable in mere inflammation. In *fever*, this shock is not demanded. In comparatively *mild* fevers, it would make the disease severe; and in those of an asthenic character, it would knock the patient down.

It is necessary, in every case of fever, to be constantly on the look out for local inflammation;—every day to ascertain what is the state of the head, the chest, and the abdomen. You should always ask if the patient complains of headache. You should look at his eyes; and see whether they are red or not. Ascertain if his pulse is full; and inquire whether there is any throbbing of the head. So, with respect to the chest, you should observe whether there is difficulty of breathing; and if there be, it is well to apply the stethoscope, and ascertain what rattling there is. The abdomen ought to be carefully felt every day; to see whether the stomach, intestines, liver, peritoneum, or other parts, be inflamed. When we find a sufficient degree of inflammatory disturbance of these parts, then it is right to take away blood locally. If the head be affected, then you should cup at the back of that organ; or apply leeches to the forehead, temples, or behind the ears; but if it be the abdomen which is affected, it is always better to employ leeches. If the pain be situated at the front of the head, it is better to employ leeches there. I mentioned, when speaking of inflammation, that the effect of leeches or cupping is often very local. I have seen parts, where they were applied, relieved; while others, in the neighbourhood, remained as painful as before. At whatever part of the head the pain is felt, there you should direct your means of treatment. If there be delirium, and this delirium be accompanied by pain and heat of the head, or throbbing; or if the eyes be red; or if there be great vivacity, like incipient delirium of an active kind; you ought always to shave the head, then apply a cold wash, or employ a bladder of ice (which is one of the best things), and put plenty of leeches on, or employ cupping at the occiput. If there be vomiting, or tenderness at the epigastrium without it, you should apply leeches, which are the best remedy for it; for, when there is tenderness or vomiting, it generally arises from inflammation of the mucous membrane; and leeches will remove it, by removing the causes of inflammation. So, with regard to the abdomen at large, when that is tender, there is generally more or less diarrhœa; the intestines are acting too violently; and leeches freely applied, are the best mode

of restraining it. After they have been applied, you may employ a blister; but you should always remember, that a blister will not take the place of local bleeding, if the inflammation be considerable. If there be local inflammation, you will frequently find that the application of leeches will remove it; and after it has greatly subsided, slight inflammation, or mere irritation, may be left; and you may find a blister of the greatest use. We shall see, when I come to speak of diarrhœa, that leeches and blisters are frequently the best remedy for it.

After a proper detraction of blood, or in a case where the loss of blood is not advisable, blisters applied to the nape of the neck, to the forehead, and also behind the ears, are very useful. A blister applied to the summit of the head, is generally a painful thing; and I would not have recourse to it, except as a last measure. Before the inflammatory state has much subsided, and before there is really more of irritation than of inflammation, the application of blisters would of course be doubtful almost any where; but particularly at the top of the head. The hazard, however, would certainly be far less, if they were applied to the nape of the neck, to the occiput, and to the forehead. I need not say that leeches must be repeated at intervals, as long as the local symptoms seem to demand them, on the one hand; and the strength of the patient will bear them, on the other. When, however, notwithstanding local inflammation or irritation, you do not wish to apply even leeches or blisters, mustard poultices are particularly useful. When applied over the epigastrium, they will stop vomiting. They are very serviceable over the abdomen; and by many persons they are employed at last, or even in an early stage, to the feet; with the view of exciting distant irritation.

You will find, in many of these fevers, that it is of the greatest use, to give mercury; especially if there be a degree of inflammation, and great foulness of the tongue. If you give it in small, but repeated doses, it will answer the purposes that I formerly mentioned. It not only purges the patient; but by degrees it causes the tongue and the interior of the mouth to become moist; and when that is effected, the patient is almost sure to be better. It is necessary to remember that it should not take the place of local bleeding. It will increase the good effect of detraction of blood; and where that is not required, it will do alone; but where that is necessary, mercury must not take its place. It must be used as an auxiliary to bleeding; and not as a substitute for it. Over and over again, in treating patients, I have omitted the mercury; and have seen the tongue grow darker and fouler; and then, upon having recourse to it again, I have seen the mouth resume its moisture, and the tongue become less foul. I have made the observation too often to doubt its accuracy. It is true there are many cases of fever, that will do without mercury. I only say that, in the mass of cases where mercury is given, the success is greater than when it is omitted. We cannot draw any argument from a single case; it is only from a series of cases, treated in a particular way, that we can arrive at any legitimate deductions; and as

far as I have seen, the moment the mouth becomes moist,—provided proper detraction of blood be instituted, and all other suitable means,—the local symptoms of inflammation generally decline; and patients recover more quickly than they otherwise would; and many recover who, in all probability, would not, unless that practice were resorted to. Still, I must again repeat that a great number of cases of fever will do well without it; but where the symptoms are severe, you will find it a most useful medicine. You should not aim at any violent affection of the mouth; and if that should occur, the medicine must be omitted till the symptoms remit; but you should feel the patient's gums every day, to ascertain whether the mercurial effect is kept up. There can be no doubt that mercury will sometimes take effect, not in consequence of having cured the disease, but by the disease becoming better, (through nature and the general means employed), and the mercury being no longer resisted. The proof of mercury doing good, consists in this fact;—that if you give it quickly to get the mouth sore, the sooner that object is effected, the sooner in general is the patient improved.

You will find, however, that calomel is frequently too active for the intestines; and blue pill, or Hydrargyrum cum Cretâ, answers better. After a time, even these will purge; so that it is necessary, along with them, to exhibit chalk mixture, or an infusion of catechu. It is well to give the infusion of catechu or kino, for it will enable the patient to bear the mercury; and you frequently find that Hydrargyrum cum Cretâ is the only mercurial preparation that can be borne. Mercury, if pushed too far, increases the mischief; it induces great irritation of the alimentary canal. Every *good* remedy of course requires to be *properly* used. Small doses of opium, I need not say, will tend to check the diarrhœa; and frequently there can be no objection to five drops of the tincture, three or four times a-day.

As to antimony, I do not think it an appropriate medicine; for it irritates the stomach;—a circumstance which you do not want in fever. There is so frequently also a disposition to sickness, that it is very likely to excite vomiting. If you give mercury at the same time, the antimony has a great tendency to counteract its effect. It may cause the mercury to be rejected; and, I confess, I have never seen any material good done by it. In cases of decided inflammation it would be a good remedy, pushed to a large quantity; but when the case is attended with great irritation of the alimentary canal, (as many attacks of fever are), and the patient has but little strength, I am sure that it is better not to give antimony; lest you make the patient's stomach so irritable, that it will not bear food, or anything else. It is only where there are very decided marks of inflammation, that it might be given; and then I should approve of mercury, infinitely more. As to its sudorific effects, I have given antimonial wine in very large doses, without producing sweating. The best mode to ensure sweating in fever, is to clear out the bowels, to reduce the temperature of the surface, and to take away

blood locally or generally, accordingly as it may be required. I have seen patients lying in a carpetted room; with the windows shut, plenty of bed-clothes on, and perhaps a fire in the room into the bargain;—and all this, I have been told, was to excite "a gentle diaphoresis!" The diaphoresis, however, never made its appearance; but by opening the windows, putting out the fire, removing the bed-clothes, taking up the carpet, purging the patient well, and removing any local inflammation that was present, it has come on immediately. The idea of a few grains of antimonial powder, or a fraction of a grain of tartar emetic, once or twice a day, being important in fever, appears to me quite absurd. With the treatment I have mentioned, nothing else will be required, till great prostration of strength sets in.

All cool drinks are of course proper; and a saline draught is as good as anything which can be given for a drink. People will frequently take from half a pint to a pint a day. It is always to be remembered, however, that all acid matters, and even a saline draught, have a tendency to increase any irritation that may be present in the bowels; and diarrhœa is frequently kept up, by a saline draught being continued. But if there be no purging,—if the alimentary canal be tranquil, acidulated drinks are very useful. Upon the whole, however, a downright cool drink,—plenty of cold water, is one of the best things that can be given.

As the symptoms all decline, all the remedies must be diminished, both as to force and to frequency; and there may be less abstemiousness practised. Nourishment may be gradually given; and one of the best articles, after slops are done with, is milk. It is very wrong to continue starving a patient after fever is gone. You will find, when the fever is over, that the appetite becomes remarkably keen;—keen in a degree that is never witnessed after any other acute disease. Patients, when the fever is over, are sure to say that they are very, *very* hungry. Other patients will ask you for full diet; but patients after fever ask from their very hearts. They seem to have a craving which impels them to ask you, whether they think you will be offended or not. You find patients more emaciated after fever, than after any other acute disease. Even when no evacuations have been practised by the medical attendant, and when the disease itself has not been attended by any great evacuations, you will still have a degree of emaciation, which I think you will not witness after any other disease; and when the fever is over, and there is such a craving for food, it would be contrary to common sense to withhold it. It seems to be a real call of nature;—it seems that food is absolutely demanded. I always make a point of giving them light animal food;—not pork or veal, or artificial trash; but plain mutton, and good fresh beef; and carefully watching the effect.

Suppose, however, that the disease does not run on in this mild form; or that the inflammation does not become subdued, as in any inflammatory disease; but that signs of great debility come on; we must then have recourse, even in the midst of fever, to good support.

Milk should be given, in as great abundance as the patient can take it; and, I think, strong beef-tea. Some imagine that, the digestive process being suspended in fever, animal broths cannot be digested; but, however that may be, I know that persons who take strong beef-tea, frequently do admirably well. By "strong beef-tea," I mean a pound of meat, chopped extremely small, and boiled in a quart of water, until the latter is reduced to a pint. Some persons will take two or three pints of it in a day; while some require only one pint;—and you find them considerably nourished by it. Many persons cannot take milk; but where it can be borne, it is excellent nourishment. I need not say that arrow-root, sago, and rice, may be taken with the milk. I believe that, occasionally, you will find that you must give more nourishment than you can get down by the mouth; and when there is extreme prostration, it is useful to give strong clysters of beef-tea, in which an egg may be diffused. I have seen them given to a patient every four hours; apparently with the result of getting him through the disease. If the clysters be discharged again, and not retained sufficiently long to be beneficial, you will find it useful to put into each of the injections a drachm, or two drachms, of powdered catechu.

More than all this, however, is sometimes required; and we must give a patient wine. If you give wine, as a *general* remedy for fever, I am certain that you will kill one half your patients; but if you give it in the latter stages of the affection; or if from the first, the disease be attended with great debility, you will frequently do much good by its exhibition. It is often indispensably necessary, but not (so far as I have seen) at the *beginning* of fever. A great number of cases do well without it altogether; but I have seen cases, over and over again, where a glass or two of wine has stopped vomiting or diarrhœa. It is where there is extreme debility,—where there is *irritation* rather than *inflammation*; and where you find that the pulse is feeble,—almost fluttering; and, by the look of the patient, you see that he is sinking;—it is here that I have found it beneficial. I have always been accustomed to quote Sir John Pringle on the exhibition of wine; because I think that his directions, both as to the quantity required, and the time at which it is to be given, are the best which have been written. He says, "In our malignant fever," (he was physician to the army) "when the pulse sunk, it always became very frequent" (that is generally observed); "and in proportion as it rose with the wine, it turned slower. I have also had experience of the good effects of wine, when the tongue has been both foul and dry." Here is an illustration of the propriety of not attending to one symptom, but to the whole. A dry and foul tongue frequently indicates inflammation; but if you find no inflammation present;—on the contrary, great prostration of strength, with a fluttering pulse, an anxious countenance, and inability of the patient to move himself, then you need not fear foulness and dryness of the tongue; but may exhibit wine. "When wine is given," Sir John Pringle says, "in proportion as the patient grows

stronger, the pulse becomes slower. Wine, in health, will *accelerate* the pulse; but when a person is weak, and the pulse is quick in proportion to the weakness, and when this state does not arise from inflammation, but downright exhaustion, wine, instead of *quickening* the pulse, makes it *slower*. "The surest indication for wine," continues Sir J. Pringle, "is taken from the long continuance of the disease; the languor, and dejection of strength; and the slowness and faintness of the voice; but we can never be absolutely certain of its effects till we try it." This is also a point carfully to be attended to. You constantly meet with cases, where you are in doubt as to the proper mode of treatment to be adopted. This occurs to me every day; and will occur as long as I live. You are not certain whether the time has arrived, at which you are to treat the case as inflammatory or not; and one is often made unhappy by this circumstance. Whenever a suspicion of this sort arises, it is best to combine both modes of treatment;—to lessen any excitement; and to begin stimulating and tonic remedies, with great caution. Whichever you find do good, you must increase; and, in fact, substitute it for the other plan. "I have seen," Sir John Pringle says, "in cases of this kind, strange instances of the power of instinct; for when wine was to do good, the sick swallowed it greedily, and asked for more; but when it was to heat them, or raise the delirium, they shewed an indifference, or even an aversion to it." It is of the greatest importance in fever, to attend to the wishes of the patient, provided he be not delirious; for then he will talk at random. But if he be not delirious, or only partially so;—if he be sufficiently collected to know his own feelings, and to give a clear account of those feelings, they should, in general, be attended to. "Sometimes," he then continues, "the physician can have no better measure for the quantity requisite, than the appetite of his patient."

Half a pint of wine is sometimes required in twenty-four hours;—one glass being given at a time. Generally a pint is the utmost that is requisite; though I have given a bottle with advantage. It is best not to give Rhenish wines, or thin claret, or any acidulated wine; for, if diarrhœa be present, it will increase the irritation of the alimentary canal. It is also best not to give sweet wines; for they are apt to ferment and become acid in the stomach. Sherry, Madeira, and port, are the best that can be employed. If there be no irritation of the alimentary canal, but a torpid state of it, acidulous wines may sometimes, perhaps, be admissible. If the patient desire porter, or has been accustomed to it, you will find that very good; but you should not give a pint of porter at once. A wine-glass or two may be given every few hours; or perhaps only once in the twenty-four hours. Because a person desires porter, you are not necessarily to give a pint in the twenty-four hours. When there is mild delirium (not delirium *ferox*, but a *muttering* delirium), or when the pulse is rapid and weak, and when extreme debility has come on, then it is right to resort to this treatment; for it will frequently stop the delirium, or, at any rate, check

it. But if you go on with it after it has stopped the delirium, it will frequently bring it back; so that the patient is worse than he was before.

In this state of debility, many give ammonia and ether; but I cannot help thinking that wine, or good malt liquor, is the best article that can be exhibited; unless the malt liquor bring on diarrhœa. It is much better to give those stimulants which most people like, than to give ammonia or ether. The former are *natural* stimulants; and are much more grateful to the patient. Care must be taken, with all these things not to overload the stomach. The moment you find the head affected by them, or the stomach overloaded, it may be necessary to give an emetic. For the same reasons that I have already stated, I should also prefer giving wine, to giving what are called *vegetable* stimuli;—such as serpentaria. It is true I know nothing about them. I dare say they are good; but I have always been able to do without them.

Dr. Stevens says that, in this state of debility, he has seen great benefit arise,—far greater benefit than from anything else,—from very small and repeated doses of the carbonate of soda, nitre, muriate of soda, or oxymuriate of potass; which supply the deficiency of saline particles in the blood. He has a vast collection of testimonies in favour of the saline treatment in yellow fever; where, after a certain period, ordinary treatment generally does more harm than good. In all such fevers, he contends that, in the first instance, it is the best practice to bleed the patient and give mercury; but after a certain period has arrived, the blood falls into the condition I formerly stated; and that condition is made worse by mercury; and, of course, by bleeding; but he says it is admirably remedied by small doses of neutral salts, particularly those I have mentioned. Twenty or thirty grains are given every three or four hours; except of the oxymuriate of potass; of which about a third of this quantity is a dose. It appears that those who have adopted this plan, in the West Indies, have had the greatest success. He informed me that, in yellow fever, many had agreed that they did their patients altogether more harm than good by treatment; and that those succeeded best, who gave nothing but saline draughts, in a large quantity. Neutral salts are now given, in the large doses I have stated, and with the very best effect. By adding neutral salts to blood, however black it may be, you make it of the brightest scarlet; but if you add acids or alkalies to red blood, you make it black.

As to tonics, by far the best is quinine. If you judge it right to attempt supporting the patient by means of quinine, it should be given, in doses of three or four grains, every three or four hours. I certainly fancy that I have saved patients in the last stage, when there has been no longer room for giving mercury, by supporting them well with good nourishment and wine, and by giving sulphate of quinine in considerable doses. But you must remember that, in giving sulphate of quinine as a tonic, it may do harm by purging; and therefore you should be on your guard against this, by admi-

nistering astringents at the same time. I frequently accompany it by catechu; and then the irritation is generally put a stop to.

In the last stage of fever, some give opium in small doses, for the purpose of keeping up excitement. Dr. Wall, of Oxford, and Sir John Pringle, did so; but others give a dose once in the twenty-four hours, for the purpose of tranquillizing the system. I have no great experience of it as a stimulant; but I know that, when a patient has long laboured under fever, it is quite safe to give him a dose of this kind, in order to procure him a good night's rest. I suspect that wine is a better stimulant than opium; although opium is certainly exceedingly useful in the latter stages of the complaint. Some highly praise musk. I need not say that morphia is sometimes greatly adulterated. It is said that opium is not always of a certain strength, and that morphia is; but from being adulterated, morphia is of the same uncertain strength as opium. Opium is particularly useful in procuring sleep; and in putting a stop to vomiting and purging. The muriate of morphia is an admirable form of opium, if not the best.

The treatment of fever consists in subduing inflammation, on the one hand; or in supporting the strength, on the other; and you must always carefully look out for local symptoms, and check them. The vomiting is frequently urgent, and very distressing to the patient; and although effervescing draughts will sometimes stop it, as will also hydrocyanic acid, yet if there be inflammation present, it is not in the nature of these remedies to arrest it; and you must then employ leeches, blisters, or sinapisms. So with regard to purging, opium will frequently put an end to it, and so will all astringents; but, as I have before said, it is best not to give astringents if there be inflammation present. Leeches and blisters will then effectually subdue it, when nothing else will. If the fæces be exceedingly fetid, you will find it very useful to give yeast, either by the mouth, or in the way of injection. An injection of yeast will frequently very much correct the offensive odour. Some give it in porter. The injection of the chlorides would, I fancy, be useful; but I have no experience of it. In fever it is necessary, every day, to attend to the state of the bladder. It frequently happens, in this disease, that a great accumulation takes place in the bladder; and patients might go three or four days without making water. Great inconvenience may, at last, arise from this source; and therefore it is a point that should be carefully looked after every day.

There is only one other circumstance that it is necessary to attend to; and that is the longings of the patient, during the progress of the disease and afterwards. These should be indulged, unless there be some very good reason against it. You see, therefore, that the treatment of fever bears an analogy to the symptoms. You saw that the symptoms of fever varied, from those of the most violent inflammation,—the most violent excitement of the system, on the one hand, down to extreme prostration of strength on the other; and the treatment must vary in like manner. It may be requisite that the

treatment should be of the most active anti-inflammatory kind, on the one hand; or the most gentle anti-inflammatory treatment, with a moderate support of the system, on the other; or it may even require to be of the most supporting and stimulating kind. Fever is not to be treated because it is *fever;* but according to the circumstances of each particular case. If you have twenty cases of fever, you are likely to find them more or less different from each other; and requiring more or less difference of treatment, according to the urgency of the symptoms. You will therefore remember that, in fever, you have to vary the treatment; from that of an active inflammation, to that which you employ in mortification, when the mortification is attended by inflammation.

REMITTENT FEVER.

I now enter upon the subject of *remittent* fever; which resembles both *intermittent* and *continued* fever; and partakes of the character of each. Essentially it is the same as *intermittent* fever. It arises, I believe, from the same cause,—malaria; but either through a modification of the malaria, or the influence of such causes as predispose to, or excite, *continued* fever, we have only remissions;—not *intermissions*, but *remissions*. The disease is really *continued*, although *remitting;*—having a relaxation of severity at different hours. This disease occurs in hot climates particularly; and in cold climates during hot seasons. It therefore occurs when and where there is the greatest abundance of vegetable matter; and where there are all the circumstances most favourable for decomposition, and the production of *aguish* fevers; and, also, where there is the greatest prevalence of those causes, which are likely to excite *continued* fever;—excitement and relaxation of the body, and disturbance chiefly of the abdominal organs. Many epidemics described, in ancient books, as plagues and pestilences, were really remittent fevers.

When remittent fever is acute, it seldom, I believe, lasts more than six weeks. There is continual fever, day and night, and every day; but the patient is much less hot at one time, than at another; so that, although he has constant feverishness, he feels himself far less ill at different intervals. Sometimes, in addition to the continual fever, there is a regular paroxysm of ague. I have seen a person constantly hot day and night; except, perhaps, every *other* day; when he had a cold fit; and then the heat would become more intense, and sweating would occur. But when the latter was over, there was no intermission; for the patient was hot again. The usual form is continued feverishness; with a great aggravation of it at particular periods. Or (if you choose to put it in another way) we have the symptoms of continued fever; but a relaxation of these symptoms at particular periods. But besides this, (although I do not recollect its being described), I have seen continual fever, with a paroxysm of ague coming on, at regular intervals, in the midst of it.

Sometimes instead of remissions, alternating with an aggravation

of the feverish symptoms, you will have the remittent nature of this continual fever shewn only by occasional chilliness. I have frequently discovered that *continued* fever (as it appeared to be) was really *remittent* fever, by noticing that, although there was continual feverishness, heat, and thirst, yet the patient in the midst of it was frequently chilly; and on other occasions by observing that, in the very midst of the heat, there was from time to time profuse perspiration. The nature of the disease was pointed out to me, either by the occurrence of chilliness (even amounting to rigors) from time to time; or by the occurrence of sweating at intervals. The correctness of this opinion has been proved, by giving the patient quinine; which has restored him to health. I think, so far as my own observation goes, that remittent fever shews itself sometimes in these two forms. Intermittent fever will become *remittent*, if the cause of *continued* fever be superadded, after *intermittent* fever has began. Supposing a patient has ague, and goes through great fatigue or want of rest, or is exposed to wet or cold, he may be thrown into continued fever. These circumstances alone would not cause ague; but as ague already exists, the disease becomes remittent fever. The causes of *continued* fever, are applied to a constitution labouring under *intermittent* fever; and then you have *remittent* fever. Frequently, however, the disease is produced from the very first.

Dr. Maculloch imagines that remittent fever is often a chronic affection; that it is often mistaken for hypochondriasis; and that the paroxysms are not observed, because they occur in the night. I am persuaded he is correct. I am persuaded that many persons have long-continued remittent fever;—frequently for many, many months; and, its true nature not being detected, it is thought to be some indescribable complaint. I have now under my care a patient who appears to be in this state;—a man who is frequently very hot; complains of heaviness in the head; is affected in his mind; and has great depression of spirits. This man was taking five grains of sulphate of quinine, three times a-day, without any effect; but on increasing the dose to *ten* grains, I found him better. I have seen many such cases; and they long puzzled me. They are principally characterized by oppression of the head, heat occasionally in the night, and great depression of spirits.

The acute disease frequently occurs in a dreadfully violent form; and a form as dreadful for rapidity as violence. It is in hot climates particularly that this occurs. This form of the disease is so violent, and so acute, that there is at first delirium and violent vomiting; with an absolutely roasting heat in the stomach; and great pain, tenderness, and agonizing distress, at the epigastrium. Besides these local symptoms of the head and the stomach, there are all the signs of a violent inflammatory fever; and these symptoms, both local and general, are soon followed by the most awful debility, and by all the signs of typhus.

The fever of the East Indies is a violent and acute remittent fever; accompanied by great derangement of the liver and stomach; and

occurs in various other parts of the East besides Bengal. At Bengal it arises from the overflowing of the Ganges, and the subsequent fall of the waters, acted on by a high temperature. After the Ganges has overflowed, the waters fall in November and December; and in consequence of the heat, such emanations are produced as to cause this fever. The violent delirium, pain, and vomiting are succeeded, after a certain time, by a remission and a sweat. This occurs about twelve or fourteen hours after the attack; and the pulse from being 130, may fall down to 90; and then the delirium ceases, and the mind is restored. The remission, however, is but short; for the symptoms soon reappear; and are then succeeded by the awful debility to which I have referred. If the disease prove fatal, there is very soon no remission at all. The gastric symptoms become more violent than before; the tongue becomes black; the pulse small; and the patient sinks. If it be fatal, it generally proves so (we are told) between the third and the seventh day; but occasionally it has been known to last fifteen, or even twenty days. Of course, I am only speaking from information which I have derived from authors. This disease has appeared, with some other symptoms, in the Mediterranean, in North America, and in the West Indies. In the Mediterranean it has appeared at Rochfort, Bourdeaux, Lisbon, Gibraltar, and Minorca. In addition to the symptoms I have already enumerated, the fever is characterized, in these countries, by yellowness of the skin, and a vomiting of black matter. Thus varied, it has been called *yellow fever*, from the yellowness of the skin. In America it is said that thirty-six, or even seventy-two hours, generally elapse before the remission takes place.

The black vomit, which is as much characteristic of yellow fever as the yellowness of the skin, is thought to be bile a little changed from blood;—imperfectly formed bile; or even blood only a little changed. Indeed, some suppose that, of the two, it would be more proper to call it *blood* than *bile*. Indeed, it is said that it has been found on the surface of the stomach, when there was none in the duodenum;—as though it had come from the liver. This black vomit is said to be by no means acrid. Dr. Physic, of America, says it is tasteless; and that he dropped some into his eye, and the organ did not become irritated. He also says that he found an abundance of it in the stomach, when a different fluid was observed by him, both in the gall-bladder and the gall-ducts. It is decidedly of the appearance of charred blood;—of blood that has undergone certain changes, and is poured forth from a mucous membrane. Another gentleman has carried his experiments, with the black vomit, farther. Dr. Firth tells us that he procured two ounces from a patient (whether dead or alive I do not know); that he drank it undiluted; and found it harmless. Before this he had drunk a large draught of it, mixed with water, with impunity; but he took two ounces in its genuine state; and said he was none the worse for it. He wished to try it in a solid form; and therefore made an extract into pills; and he says that he found as little inconvenience from them, as he had previously

done from his black draughts. The fluid and concretion of melanosis, also is generally inert.

With regard to the yellowness of the skin, it is ascribed by some to bile pervading the system; but there are very great doubts as to whether that is its origin. The bile is very abundant in this disease; and may be regurgitated, by violent vomiting, into the veins, through the compression of the parts; and, indeed, bile is abundant in the urine. There is a great collection of bile in this disease; and it may find its way into the veins, and more or less will go into the circulation; but there is no obstruction. At any rate, it is certain that, if it be bile, it is not obstruction that produces regurgitation of it; for the fæces are well tinged with bile. One reason for saying that it is not bile, is that it will occur in patches. It is not more visible in the eyes and nails, than in other parts of the body; and it is not diffused pretty equally throughout the body, as we observe in jaundice; but occurs in patches, as ecchymoses would do. It would appear rather to owe its origin to the blood being changed;—to the serum, with a few red particles, escaping more or less into the cellular membrane;—the blood having undergone a change. It is altogether analogous to ecchymosis, when nearly gone; and we know that an ecchymosis does not arise from bile; but from an effusion of blood, that is subsequently in a great measure absorbed;—the portion which remains giving a yellow colour. Sir Gilbert Blane says, that this yellowness has spread from bed to bed without any increase of the malignity of the disease;—that when yellow fever has prevailed in the West Indies, he has observed it spread from bed to bed; and that it bore no proportion to the malignity of the disease. It appeared in two vessels (the Alcides and the Royal Oak), when there was only a slight indisposition. He also says that, unlike jaundice, it begins usually about the parotids. There is usually fulness and flushing of the face and neck; but particularly about the parotids. Here there is the most blood; and here it is that the yellowness appears in the most distinct manner.

This yellow fever (or *causos icterodes*, as some call it) is apparently another form of bilious remittent fever; and occurs only in countries and in seasons, where the heat is such as would destroy or arrest the plague. It occurs, too, in hot seasons; such as would usually put an end to contagious typhus fever; when that is prevailing. Yellow fever, or bilious remittent fever, are always extinguished by cold weather. As soon as the cold sets in, they cease. It is said that the blacks, in America, are usually less violently affected than the whites; but that if they go into a cold country, and reside there for a time, and then return to America, they suffer equally with the whites. Persons who are unaccustomed to a high temperature, it appears suffer the most from this disease. Blacks coming from hot countries, or having descended from parents born in hot climates, suffer less; but if they reside in cold climates, their constitution partakes in some degree of that of the white; and then they suffer far more than others of their black brethren.

Cold countries, and the cold seasons of hot climates, are free from this disease. It generally occurs only in the tropics, and elsewhere when the heat is as high as in the torrid zone; but very intense heat, in cold climates, has been known to occasion it. If the temperature have accidentally been as high as in a hot country, then even a cold climate has been subject to it. Sir John Pringle, for example, says that he has sometimes seen yellowness of the skin in Flanders. Dr. Brocklesby mentions seeing it, in 1758, in the Isle of Wight. Dr. Home saw it at Worms, in Germany, in 1743. All those places which are subject to it, have a quantity of dead vegetable matter, in a wet and stagnant state. It prevails in the West India Islands, in Charlestown, Norfolk, Providence, Philadelphia, New York, Baltimore, and Boston. Those places that have the largest quantity of vegetable matter for decomposition, when the hot weather comes, and have the most moisture, are most subject to this yellow fever. It occurred at Lisbon till the earthquake happened. It occurs also at Cadiz, Bourdeaux, Rochefort, Seville, and Gibraltar. The latter place is situated high enough; but although high in reference to the sea, the town is low in reference to the mountains. The rain that runs off four thousand acres, it is said, streams towards the town; bringing with it a quantity of vegetable matter from the hills, as well as fragments of vegetable refuse from the markets. Even straw has been said to afford the source of this disease at Gibraltar. Sir John Pringle says that the straw was very injurious to the army there. The rocky soil increases the mischief, as it causes the water to remain.

However, notwithstanding it would appear that yellow fever is the product of malaria, there has been a difference of opinion, on this subject entertained at different times. A Mr. Vines, a planter and "physicker" in the West Indies in 1647, writing from Barbadoes, ascribes the yellow fever to "the Lord's heavy wrath;" and not to any thing in the climate. The island was not cleared for a considerable time after he wrote. The disease prevailed then, to a greater extent than it does now. A Spanish officer named Armesta, who ascribed the disease to local situation and atmospheric causes, was actually at one time arrested; and was obliged to retract his views, as being "false, dangerous, and seditious opinions." So violent, at one time, was the opinion that it had nothing to do with local situation, that fifteen hundred copies of this officer's book were burned. In the year 1800, the government had a different opinion; and ascribed it to something in the atmosphere. And this is really the case; for it is owing to miasmata.

A great question has arisen in the western hemisphere, and in the Mediterranean, as to whether yellow fever is contagious or not. Dr. Ffirth, of Philadelphia, who has tasted the black vomit in the way I have stated, says that he has frequently inoculated himself with it, and also with the serum, saliva, &c. of patients labouring under yellow fever; but that no prejudicial effect was produced. It is said that it is never propagated a mile from Philadelphia; and that there-

fore it must owe its origin to local causes. Dr. Rush, who was a celebrated American physician, and a violent contagionist, contended that this was a contagious disease. He afterwards retracted his opinions; and begs the forgiveness of the friends of science and humanity, if the publication of his former opinions had had the effect of increasing the miseries attendant upon the disease; and he says, indeed, that such is the pain he feels in recollecting that he ever entertained or propagated the opinion of its being contagious, that it will always lie heavy at his heart; and deprive him of the pleasure that he might otherwise have derived, from a review of his attempts to fulfil the duties of his public station. He says he was misled by Dr. Lining, and other writers. "I am aware," he says, "of the influence which changes in opinion have upon a medical man's reputation; but still I would cheerfully make a sacrifice of that kind, could it avert the evils which are connected with the belief of its being a contagious disease." The mode in which a false belief in contagion does harm, is by preventing the healthy from attending upon the sick; by stopping commercial intercourse; and by allowing the patients to remain in the unhealthy spot, which really causes the disease.

It is impossible for us who live here, to know any thing about these matters; for there is as much evidence on the one side, as on the other. In the East Indies it is never thought to be contagious; but in the West Indies it is to be so considered, by a large number of persons. The fever in Gibraltar gives rise to a diversity of opinion; and there are as many protestations as to its being contagious, as there are as to its arising from malaria. Dr. Stevens thinks that he has discovered the reason of all these discrepancies of opinion. He says there are three distinct yellow fevers in the western hemisphere. In the first place, there is one in which there is no contagion at all; but is a climate fever; and arises simply from excessive heat. It occurs to new comers, who are operated upon violently by the intensity of the temperature. Severe bilious symptoms arise; but he says there is nothing contagious in it. He contends, next, that there is the remittent fever; the *yellow* fever; arising from the local cause of malaria and heat together; a fever which is seen by every body, and acknowledged to exist by most. Besides these, he says there is a yellow *typhus* fever; which he has been able to trace to the negroes in America, who have come from Africa. It is a contagious disease, attended with yellowness of the skin, and brought there by the Africans. He says that all these three fevers are attended with yellowness of the skin. What his observations are, or how numerous they may be, from which he has drawn these conclusions, I cannot tell. He says that the symptoms of these fevers are all different at first; but that after a time they are all the same; and that although the general treatment of the whole is the same, yet that (as they differ in their minutiæ) they require a modification of treatment. I cannot say more upon this subject. I give no opinion upon it; but I should think it likely to be the case;—that there are two or three

different kinds of fever; and that the intensity of the heat occasions them *all* to be characterised by great yellowness of the skin, *some* by a depraved state of the blood poured forth under the skin, and *others* by jaundice. I have no doubt that Dr. Stevens's facts will be numerous; and that many of his opinions will be found well established. I believe that the greatest authorities in America are satisfied that the yellow fever (as it prevails there) is, for the most part, not contagious; but that it is *sometimes* contagious, appears very certain.

In a conversation which I had with Dr. Stevens, he mentioned an instance of yellow fever occurring in a family, situated at a great distance (across the sea) from any place where the disease had prevailed. The captain of a vessel was in a port, where yellow fever prevailed; and being continually among the people, his clothes and his linen were impregnated with it. I am not sure whether he had the disease himself; but he had been in the midst of those who laboured under it. When he left the port he cheated the quarantine; and went, with his linen unwashed, to another place, where no fever had prevailed. According to the quarantine regulations, his linen should have been washed; but I understand that, under those regulations, washing is very dear; and that every thing is charged double. He, therefore, to save this double expense, contrived to take some of his dirty linen with him;—satisfied that the disease was not contagious. The linen was taken out by his family, in this place where yellow fever had not prevailed; and, in a very short time, one and another of the sisters and maids who washed it for the captain, died; and an old woman, who lived in another part of the country, and came to help them, was also seized with the disease. It spread from house to house, all through the town; and produced very great devastation. Dr. Stevens says, that he knows it was the contagious form; that, in fact, it was what he calls *African typhus*. He took a voyage for the purpose of inquiring into the circumstances. The sisters said that it arose from the dirty linen; and it appears that he was able to trace it with the greatest accuracy. He also mentioned his opinion that *cholera* is contagious; but he is satisfied that the contagion is not efficient *at first*. He says you may be exposed to a person labouring under African typhus (as he calls it), or to a person labouring under cholera, without any fear of catching it, while you are in his *first emanations*; but that if you be exposed to these emanations, after they have passed from him many days, then you stand a chance of getting the disease. He considers that what proceeds from the body is not, at first, efficient;—that it is not a perfect poison when it is first produced; but that it undergoes a change, which enables it to produce the disease. He reasons in this way. Many persons who have visited cholera patients, have escaped; but they have suffered as soon as they have been exposed to fomites, in which the secretion was contained. How that may be, I do not know. He also says that he has ascertained another circumstance;—that, before the disease breaks out, the blood will

shew the disease. He says that this may also be remarked in scarlet fever. A medical man, finding that he was ill, was bled. The blood was shewn to Dr. Stevens; who found that it would not turn red with the usual neutral salts. He stated that he was satisfied the gentleman was about to have a contagious disease; and, in three or four days after this, scarlet fever occurred. He says that he has seen yellow fever in the blood, before the disease appeared; and that, in all instances where the disease subsequently appeared, he found the blood was of such a character, that it would not redden on the application of a mixture of neutral salts. Of course, all these things are exceedingly crude at present; but it is the opinion of many eminent chemists, that we are upon the eve of some important discoveries, with regard to the nature of all these matters;—that, by the treatment which Dr. Stevens has recommended, great light will be thrown on the pathological changes, which take place in the various fluids of the system; and on the nature of many diseases. I feel satisfied with the truth of much that has been said; and I feel satisfied that a strong and new light will be thrown upon a number of these matters, respecting which we are all at present in the dark. The latent period of this yellow fever, is thought to be from two to ten days.

With regard to the treatment, the best writers agree that, in the first instance, there should be copious venesection. Whether it be the fever of the western hemisphere, or the mere bilious remittent of the east, cold effusion, or cold *ablution*, is always serviceable. Great attention should be paid to any local inflammation that may occur; and local bleeding may be demanded. As to emetics, they cannot be employed if there be any tenderness of the epigastrium on pressure. Mercury is found useful in the first instance; but not afterwards. When you have symptoms of violent inflammation, it is very useful; but still a person may die with his mouth sore, if it be given too late, or a proper degree of bleeding is not practised. Of course moderate purging is necessary; but as soon as the remission occurs, sulphate of quinine should be given in great abundance; and Dr. Stevens says that, when the symptoms of typhus fever come on,—after venesection, and mercury, and cold affusion have been freely had recourse to,—no time should be lost in pouring in neutral salts. He says he has strong evidence to shew that, where these fevers have proved fatal to a frightful extent, the mortality has been reduced almost to nothing, by practitioners having listened to his advice. By giving neutral salts (as the carbonate of soda, the oxymuriate of potass, and common salt) every hour during the disease, the beneficial effect has been infinitely beyond what any one could have anticipated. I know that this gentleman states nothing as a fact, but what is strictly true. If he merely give an *opinion*, of course (like other men) he may be wrong; but upon whatever he states as a *fact* you may place the greatest reliance; and if he say that a certain number of cases out of the whole number, have been cured, you may depend upon it that the statement is correct.

Before I conclude the subject of these fevers in hot countries, I must mention that, in the East Indies, the sun and moon appear to have a great influence upon them. Dr. Balfour has written a work upon what he has called "the sol-lunar influence;" * and he proves that bilious remittent fever, is most easily taken at new and full moon; that at new and full moon the disease is greatest, and relapse most common; and that those suffering from pernicious fever, which has destroyed the constitution, are particularly affected at that period. This may appear incredible or whimsical; but I have no doubt of the fact. I have seen medical men who have practised in the East Indies; and they say it is well enough for *us* not to believe it; but they have suffered enough to know that it is perfectly true. I do not suppose that it is to be ascribed to the direct influence of the sun and moon upon the body; but that it arises from the operation of these upon the tides. The new and full moon, with respect to the elevation of the water, may have very great effect; and that, again, may have an effect, by causing more or less malaria to be disengaged; so that the atmosphere is more impregnated with it at those periods, than at others. I believe there can be no doubt whatever on the subject;—that at new and full moon, in the East Indies, fevers are most easily taken, relapse is most common, and fevers are most intense; and that those who have suffered most from these fevers, then feel a strange sensation about them;—just such as we continually find here, when the east wind blows upon a person who has previously laboured under ague.

CUTANEOUS DISEASES.

I have spoken of those diseases which may affect various parts of the body;—inflammation and different structural diseases; and have termed them *general* diseases. I have spoken, likewise, of certain diseases which appear to pervade, nearly or entirely, the whole of the body; and may be called *universal* diseases. I now come to the affections of particular parts; and I said that I should proceed from the head to the foot,—*a capite ad calcem;* that being as good an arrangement as any; and much more serviceable than an alphabetical arrangement, at any rate; for, in this way, diseases which are situated in contiguous parts, and must therefore have many symptoms in common, are considered together.† Before we begin with the head, it will be better to consider those which affect the surface; and after we have gone over the surface, we can proceed into the interior.

The diseases of the surface of the body are commonly called *cutaneous* diseases. They are far more numerous than, from the

* "Treatises on the Effects of Sol-Lunar Influence in Fevers, &c.; by William Balfour, M.D."

† The advantages which Dr. Elliotson here contemplates, are best secured by Dr. Fletcher's "Physiological Arrangement of Diseases;" for which see Appendix, No. IV.

works of Dr. Willan, and his pupil Dr. Bateman,* you would imagine them to be. Their works may be considered as the same; for the labour and honour was Willan's; and Dr. Bateman added little to what he learnt from his master; who was profoundly read in cutaneous diseases, and had laboriously observed them. With the generality of readers, Dr. Bateman's reputation is as great as Willan's;—just as smatterers in phrenology speak of Gall and Spurzheim as equal; though the originality and glory is all Gall's; and his pupil, Dr. Spurzheim, learnt the science from him; worked under Gall, as his assistant; and has merely added to and improved upon Gall—(if he *has* added and improved; which I will not deny); and stands at a humble distance from his master. The best work on cutaneous diseases I conceive to be that of a French writer, Rayer. He treats of all the diseases of the skin and its appendages; —thus taking a more enlarged view than Willan; and he treats of a much more considerable number of affections of the skin itself. When I say that Rayer's is altogether a much better book than Willan's, I do not at all wish to depreciate the latter; for a great part of the merit of Rayer's is ascribable to Willan. As far as Willan went, Rayer is under great obligations to him. Willan preceded Rayer; and the arrangements of the latter, in reference to the subjects treated of by the former, are grounded altogether on his publication. Rayer's is the best book, on account of its arrangement, the greater number of diseases of which it speaks, and the fuller and more scientific account of the nature, causes, and treatment of the diseases. Whoever would translate Rayer (omitting his cases, so as to lesson the unnecessary size of the work) would find he had entered upon a speculation so successful, that Bateman's superficial work, synopsis only as it is, would be superseded.†

Rayer divides the diseases of the surface of the body into four groups. I. Diseases of the skin itself. II. Diseases of the *appendages* of the skin;—such as the nails, and the cutis which furnishes the nails. In this division are to be found whitlow, and morbid affections of the nails, the hair, and sebaceous follicles. Here he treats of plica polonica, baldness, greyness, &c. III. Foreign bodies which sometimes beset the skin; as others do the intestines. These are divided into inanimate and animate;—*inanimate*, such as the sebaceous matter on the scalp of new-born infants;—*animate*, which I need not say include fleas, bugs, and lice; together with certain other animals of which we shall speak. IV. Those affections which commence in other parts of the body; and afterwards implicate and disfigure the skin;—such as the disease called *elephantiasis*; in which the skin becomes implicated only secondarily. You will observe that this is a fine comprehensive view of diseases of the surface of the body.

* "Description and Treatment of Cutaneous Diseases; by Robert Willan, M.D." "Practical Synopsis of Cutaneous Diseases; according to the Arrangement of Dr. Willan; by Thomas Bateman, M.D."

† Rayer's work has since been translated by Dr. Willis; Librarian of the Royal College of Surgeons, London.

Then, when we consider diseases of the skin itself,—truly cutaneous diseases, they are arranged by Rayer into six classes; and this is also a most excellent division. 1. All those diseases of the skin which are *inflammatory*. 2. Those which are mere *congestions;* and cutaneous and subcutaneous *hæmorrhages*. 3. Those which are *nervous* affections of the skin; such as morbid or deficient sensibility of it. 4. Changes of *colour* in the skin;—not at all dependent upon congestion. 5. Morbid *secretions* of the skin. 6. Diseases of the *structure* of the skin. This is a very useful view of diseases of the skin itself. They are arranged by Willan without any reference to their real nature. Willan's work (and Bateman's) is rather one of Natural History than Pathology. His delight and excellence was in the description of appearances. Rayer's work is excellent for deeper matters. This is the natural progress of knowledge. First, perfection is attained in distinguishing the *outward appearances* of objects and phenomena; and this accomplished, their *nature* and *causes* come next to be investigated. Willan accomplished much, though greatly indebted to foreign predecessors; but his labours were only a stepping-stone to what then became important. Again, I entreat you not to think I wish to depreciate his work; but we must not rest contented with progress no greater than he was able to make, in the science and treatment of cutaneous diseases.

It is of the greatest importance always to consider whether cutaneous, like other diseases, are inflammatory or not; and we therefore group all those that are inflammatory together. Then all those are naturally grouped together, that depend upon congestion; such as ecchymoses, cutaneous tumours, and subcutaneous bloody tumours, —sometimes called *nævi materni*. Thirdly, those which are seated in the nerves of the part; fourthly, changes of mere colour; fifthly, morbid secretions; and sixthly, malformations, and structural changes of the skin. In this way we shall bring before us all the diseases of the skin itself.

It is very important that we should recollect that, although these are called diseases of the *surface* of the body, many of them are affections of a much deeper nature;—that the affection is frequently connected with, or dependent upon, a general diseased state of the system. Frequently the mucous membranes are affected as much as the skin;—for example, the conjunctiva of the eye, the Schneiderian membrane of the nose, and the mucous membranes of the mouth, throat, and of the whole of the air-passages and alimentary canal. All these parts are liable to be affected, in some diseases of the skin. I need not tell you that in measles, (which is called a disease of the *skin*), we frequently have inflammation of the various mucous membranes which I have just named. So in the disease which is called *purpura*, and which is considered a disease of the skin, because there are purple spots on that organ, we have often the same appearances within, as upon the surface. I formerly mentioned that this was as much an *inflammatory* disease as one of congestion; and it may be *entirely* inflammatory. You will see the intestines, the lungs, and

the liver, beset with black patches, and even parts within the head; for, in this disease, blood has sometimes been effused in such quantity, that apoplexy has occurred. Although these diseases particularly affect the *skin*, yet in many of them, before the affection of the skin appears, there is some *internal* derangement; which occasionally ceases when the external affection appears, but which sometimes continues throughout. In many there is an internal derangement, at a certain time, during an affection of the skin. In many of these cutaneous affections, the whole system appears more or less in an inflammatory state; and in others the whole system is in a state of extreme debility,—complete exhaustion. Although, therefore, these are called diseases of the *skin*, from their producing very prominent symptoms there; yet it is to be remembered, that many of them are of a more deep and extensive nature. Many, of course, are *really* local; such as a change in the *colour* of the skin,—called *pityriasis versicolor;* where a person has a yellow appearance of the skin;—a thing very common on the necks of young women; and diseases of the *appendages* of the skin; such as diseases of the nails, and various affections of the hair and sebaceous glands. These are pure diseases of the integuments of the body; but many affections, called *cutaneous* diseases, are only cutaneous in one point of view.

The *inflammatory* diseases of the skin are spoken of, by Rayer, under various classes; according as there is *minute* or *extensive* inflammation; according as the inflammation produces a secretion of *water* or of *pus;*—and according as the inflammation is attended by *scales*, or produces a *tubercular* appearance. The inflammatory diseases are arranged by Rayer, much in the same way that Willan arranges *all* the diseases of the skin. The latter arranges cutaneous diseases, first, accordingly as there are mere pimples, without any contents;—*papulæ.* Secondly, accordingly as they are scaly;—*squamæ.* Thirdly, accordingly as there are diffused patches of redness;—*exanthemata.* Fourthly, as there are collections of water;—*bullæ.* Fifthly, as there is a secretion of pus;—*pustulæ.* Sixthly, as there are little vesicles;—*vesiculæ.* Seventhly, those in which there are tubercular appearances on the skin;—*tubercula.* And, eighthly, those in which there are stains;—*maculæ.** Several sets of diseases thus arranged by Willan, come together in the arrangement of Rayer, under the one head of "inflammatory diseases."

You see, therefore, that the diseases of the integuments of the body may be considered, in the first instance, accordingly as they are diseases of the skin *itself*, or of the *appendages* of the skin; as there are foreign bodies upon the skin;—which cases are still allowed to be called diseases of the skin; or as the disease begins in other parts, and implicates the skin. And then the diseases of the skin itself may be subdivided, in the way I have already stated, into inflammatory, congestive, nervous, changes of colour, morbid secretion, and structural changes. The *inflammatory* diseases of the skin are

* This arrangement will be found, more at large, in the Appendix, No. V.

arranged by Rayer, first, as they occur in *patches* of inflammation;—*exanthemata;* then, as they produce collections of *water;—bullæ;* then, as there are *minute* collections of water;—*vesiculæ;* then, as there is *suppuration;—pustulæ;* or as there is *more extensive* suppuration;—*furunculi;* then, as there are mere *specks* of inflammation—*papulæ;* then, as there are *tubercular* appearances;—*tubercula;* then, as there are *scales* produced;—*squamæ;* then, as there is inflammation in *lines;—linear* inflammation; then as there exists a disposition to gangrene;—*gangrænosi;* as plague, malignant pustule, and glanders; and then he makes a class called *multiform;* in which diseases have no fixed appearance;—such as syphilis. It appears to me, that the most simple way of considering these inflammatory diseases, is to consider them, first, when the inflammation is in the most *minute extent;*—simple inflammation not larger than the point of a pin;—*papulæ.* Then we shall come to a more extensive inflammation;—*exanthemata;* then to one which produces a little collection of *water;—vesiculæ;* then to a *large* collection of water;—*bullæ;* then, where *pus* is secreted;—*pustulæ;* then, where pus is secreted in *larger quantity*;—boils, or *furunculi;* then to where the inflammation proceeds to *gangrene;* then where there is *organic* disease; first of the *slightest* kind (only of the cutis) as in the *scaly* diseases;—then of a kind more deeply, as in the tubercula; and thus we shall go on in a more natural way, than that which Rayer has adopted.

PAPULÆ.

We now enter upon the consideration of inflammatory diseases of the skin itself; and, in the first place, we shall speak of those which produce no secretion whatever;—no pus, no water; but which consist simply in inflammation, and that of the most limited extent; producing a little *speck* of inflammation. Of course there may be a *number* of these little spots. When inflammation of the skin appears in minute spots, these are called *papulæ*; the English of which is, strictly speaking, *pimples.** The word "*pimple*" is commonly used to signify any little elevation or inflammation of the skin;—whether there are no contents, or whether there is water or pus; but in proper language, and to be very correct, by a *pimple* is meant a minute inflammation of the skin, causing a very small accuminated elevation of the cuticle, without any contents whatever. Dr. Willan's definition of a papula, or true pimple, is—"a very small accuminated elevation of the cuticle," (I should suppose of the cutis and the cuticle together) "with an inflamed base; not containing fluid or tending to suppuration; but, for the most part, terminating in scurf." The duration is uncertain; but it has a tendency, in general, to terminate in scurf. If such a slight inflammation be attended by watery contents, it is called a *vesicle;* but if the contents be pus, we call it a *pustule;* so that with respect to the most minute inflammation of the skin, we may have a papula, a vesicle, or a pustule;—in

* The word "*papula*" is derived from "pappa," *a nipple*; and the diminutive "ulla" (from υλη); and signifies, therefore, "a little nipple."

other words, mere *inflammation*, inflammation with *water*, or inflammation with *pus*.

When this minute inflammation (papula) has no contents, it is then that it usually terminates in scurf;—scurf being a very minute exfoliation of the cuticle; which will take place, not only with evident inflammation, but sometimes with so exceedingly slight a degree of inflammation, that we can hardly call it more than a little irritation. A new cuticle is found underneath the exfoliation. There is no rawness produced; but under the minute portion of cuticle which comes off, we see a fresh cuticle. There is no moisture at all; the parts being still perfectly dry.

These papulæ are considered, by Dr. Willan, as inflammations of the papillæ of the skin; which he considers to be enlarged, elevated, and indurated; but I should think, if it be the papillæ which are inflamed, we should be justified in saying, as I *have* said, that there is something more than elevation of the cuticle. If the papillæ be inflamed, of course we must consider the disease as situated in the cutis;—the cuticle being elevated above the skin itself. The inflamed base cannot be in the *cuticle;*—that is out of the question; and therefore it must be situated in the *cutis*. Where these papulæ (which are, more or less, of a red colour) occur, there is an uneasiness experienced; which may be called pain; but it is pain of an itching character;—a *painful itching*, we might say. Inflammation of this description may end in resolution, without any formation of scurf; or it may terminate in a more extensive separation of the cuticle, which is called *desquamation;*—a separation of the skin in scales. For the most part, however, the cuticle is separated in such minute portions, that it is only a fine dust (a *scurf*) which comes off. If this inflammation be increased by the person rubbing or scratching, or by heat improperly applied, you may carry on the inflammation to the formation of water; so that you convert the papula into a vesicle. Again, if you add still more irritation, you may cause it to produce pus;—you may easily convert it to a pustule. If the individual scratch himself still more, and great irritation be excited, instead of mere pustules you may have boils;—pretty large collections of pus; but all this is not the tendency of the disease itself. These papulæ, which consist of mere spots of inflammation, are not contagious.

Dr. Willan makes *three* kinds of papulæ; but I think it would be as well to say that there are but *two*. These are the strophulus, or red-gum, of children; the lichen of adults; and the disease called *prurigo*. His first plate contains a good representation of them. I cannot but believe that strophulus and lichen are purely the same disease; and I think it would be a lucky thing if the name "*lichen*" were given to both; or if both names were dropped, and one term substituted for them. The disease called *prurigo*, is characterized by great itching; and is often mistaken for itch. Neither lichen nor prurigo has any particular name in English.

STROPHULUS.

This disease is peculiar to infants, and is called, by the common people, *red-gum* or *red-gown.* It is supposed that "*gum*" is a corruption of "*gown;*" and, in some old Dictionaries, it is still written "*redde-gowne.*" It is also occasionally called, by the common people, the *tooth-eruption.* It is a very unimportant disease. The least irritation will cause it; whether in the gums, abdomen, or other parts of the system; and, with a very little attention, it goes away. In fact, it need never create any alarm. It is divided, by the common people, into *red* and *white.* Several parts of the body are affected in succession;—it does not come out at once. It chiefly affects the face and extremities; and is sometimes intermittent;—not *periodical;* but it comes and goes.

There is no difficulty whatever in treating it. If you give the child a dose or two of gentle physic, for the most part the affection goes away. If you be aware that it appears under different varieties, you will not be surprised when you see two or three cases differing a little from each other; but as to its making any essential difference in the disease, or in the treatment, that is out of the question. You will find most of these cutaneous affections represented, extremely well, by Drs. Willan and Bateman. Those of which I have just spoken, will be found in Plates i, ii, and iii.*

You will find it divided, by authors, into a number of tiresome varieties; which only serve to burden the memory, and are soon forgotten when you come to practice. The great point which I would urge upon you at present is, to recollect the characters of diseases *in general;* and as to the particular *varieties,* learn them afterwards, as different cases present themselves to your notice; and then do not trouble yourself so much about the *names* of these varieties, as about remembering the fact that there *are* some varieties in the appearances of the affections; and still more (what is not enough dwelt upon by subdividers) some varieties in the condition of the *system,* and of the *part affected* in these diseases. It is impossible to recollect all the minute divisions of these different diseases, without seeing patients; and then it is impossible to learn them all at once. It is a work of time; and there can be no doubt it would be quite as well, if many of them were not so subdivided by authors. You will find this particular affection divided into, 1. Strophulus *intertinctus.* 2. Strophulus *albidus.* 3. Strophulus *confertus* (Plate iii; Figure 1). 4. Strophulus *volaticus* (Plate iii; Figure 2). 5. Strophulus *candidus* (Plate iii; Figure 3). Some of these names I shall forget, as soon as I have given the lecture. It is right however, you should know, that the disease which you see in babes, and which is called by old women *red-gum,* is called by Dr. Willan *strophulus.*

If the papulæ be of a vivid red colour, but are intermixed with red dots or specks, called *stigmata,* it is then called "strophulus *intertinctus.*"

* Dr. Elliotson chiefly employed the quarto plates of these authors, to illustrate the appearance of Cutaneous Diseases. We shall, therefore, merely refer to their numbers; in order to avoid the repetition of their names.

Willan defines a *stigma* to be a minute, bright red speck, *without* elevation. If the papulæ consist of whitish specks, it is called "strophulus *albidus*;"—that is to say, *white gum*; and this is often intermixed with the other. If the papulæ be all united together, in the way you observe in Plate iii, Figure 1, it is called "strophulus *confertus*;" and, by the common people, *rank* red-gum, or tooth-rash. It is hardly worth while to give particular names to these little variations of the disease. You will sometimes see different varieties in different parts of the same child. If the papulæ of strophulus be of large size, and have no inflammation at their base, they are called *absolutely* white,—"strophulus *candidus*." This, you see, is a contradiction; for a papula, according to Dr. Willan's definition, is an acuminated elevation of the cuticle, *with an inflamed base*. This variety usually succeeds acute diseases of children a year old. If after continuing some time, they produce a scurf, and then disappear, and another crop comes on, it is then called, "strophulus *volaticus*;"—coming and going;—continuing but for a short time. The patches are circular; and turn brown in a few days; and the whole series ends in a few weeks. I am sure it must be difficult to remember the differences, which occasion the diseases sometimes to be called *candidus*, and sometimes *albidus*. The important point will be, however, not to recollect the names of these little particulars, but to remember what I am about to say, with regard to the general character of the disease. It is sometimes pretty severe; and a great many papulæ are crowded together; and then the variety is called "strophulus *confertus*;" the papulæ are extensive, crowded, smaller, and less vivid. This form will occur in children from seven to eight months old. The patches may be hard; and they usually exfoliate in a fortnight. In this severe form, it sometimes begins in the legs, and spreads upwards to the loins and navel, with a general redness;—the cuticle cracking into large pieces; and this will occur every now and then, for two or three months. Some children will labour under it, till they have cut all their first teeth.

With regard to the *causes* of it, I believe that any little irritation of the alimentary canal will produce it. The irritation of teething, and very frequently exposure to cold,—especially if aided by wet,—will induce this, and various other inflammatory diseases of the skin. With regard, however, to the treatment, whether the disease appear in this aggravated form or not, one of the best things is to give mild purgatives, with some alkaline matter; as, for example, a little Liquor Potassæ, or carbonate of soda, or magnesia, two or three times a-day. There is, generally speaking, acidity; which may be corrected by something of this description. Moderate aperients can be given at the same time; and the warm bath is found particularly useful. If the disease should prove obstinate, I would certainly give Hydrargyrum cum Cretâ;—mercury in a very innocent form; but for the most part it is not required. Great attention should be paid to the diet; for, very frequently, the disease arises from some little error in that respect;—something improper having been accidentally

(or regularly) given. If the disease suddenly disappear, you may find the child evidently in want of stimuli; and when that is the case, a few drops of liquor ammoniæ, two or three times a-day, will be of use; particularly if it be conjoined with the warm bath, and good nutritious food. The warm bath is one of the most important things that can be had recourse to, in diseases of the skin, when you want to bring out an eruption, or to encourage it. I am told that the warm air-bath does as well; but I have no experience of it. To avoid cutaneous irritations, nurses should always *wash* infants' napkins, and not merely *dry* them.

In this disease, if you should find a pretty active inflammation of the skin, you would of course give stronger purgatives; and there might be no harm in applying leeches. If, on the other hand, you found debility, it would be well to give tonics;—iron or quinine; and to order nutritious diet. You will find that cutaneous diseases occur in all states of the body. Sometimes there is such debility, that you will not be able to cure the affection without the temporary use of meat, wine, porter, iron, &c.; while, in other cases, there is an inflammatory state of the body, making it evident that bleeding must be had recourse to, and low diet. So, in this disease of children, sometimes there is debility of the whole body;—the disease continuing because the whole system is out of order; and then better nourishment and tonics will be required. In other cases, local bleeding and stronger purgatives will be necessary; but, in general, all that is wanted is a warm bath, and alkaline and aperient substances.

In this disease, you should be particularly careful that the child is not exposed to cold. It is dangerous to put a sudden stop to the eruption, by allowing the child to catch cold. It is possible that the eruption may cease, and that the child may fall into a state of depression; in which case the warm bath will be required. But it may fall into an internal inflammatory state; and in that case, also, the warm bath may be useful; but antiphlogistic measures may be required in addition; for when eruptions suddenly cease, there is often an internal inflammation suddenly set up. It is right you should know that these accidents may happen; but, for the most part, the disease is a mild insignificant affection; more a matter of curiosity, indeed, than anything else. I show you a representation of these affections, in Rayer's work. It is copied from Willan; but the diseases are put in a smaller compass.

LICHEN.

The affection which occurs in adults, and is similar to strophulus, is called *lichen*. There is scarcely any difference in the appearance of these diseases; and I have always been accustomed to consider them as the same;—affecting children, and called *strophulus*;—affecting adults, and called *lichen*. Last year, when I read Rayer for the first time, I was glad to find that he entertained the same opinion as myself. I always spoke of them as the same; but I thought I might be wrong; for I do not pretend to be so skilled in these

matters, as those who have devoted themselves entirely to them. But Rayer says he should unite them, were it not for the fear of introducing a new division in the history of papular diseases, which Dr. Willan has described with minute accuracy. It is only from the fear of introducing more confusion, by altering matters as they stand, that he does not treat them as the same disease. I think it had better be done, as it would simplify the matter at once, and burthen the memory with one disease and set of names the less.

This disease, in adults, usually occurs in the extremities; and particularly on the outer and posterior parts of the extremities. The size of the papulæ is that of the head of a very small pin; and they generally terminate in scurf. The disease is sometimes acute; sometimes recurrent; sometimes chronic; sometimes general; sometimes partial; and sometimes connected with internal disease. It is divided, by authors, into—1. Lichen *simplex* (Plate iv; Figure 1). 2. Lichen *pilaris*; that which occurs particularly about the roots of hairs (Plate v; Figure 1). 3. Lichen *circumscriptus*; a form in which the papulæ are clustered together (Plate v; Figure 8). 4. Lichen *agrius*; a very severe form indeed (Plate iv; Figure 2). 5. Lichen *lividus* (Plate v; Figure 2.) 6. Lichen *tropicus*. 7. Lichen *urticatus*. In the simple form, you must expect the papulæ to be larger than when they occur in children. If they be very severe, they cluster together; the skin becomes inflamed; and they form deeply red patches. These affections are represented by Rayer;—Plate 6, first division.

It is said that the simple form of this complaint lasts generally from ten to twenty days. Sometimes, before it comes out, there is a smart degree of feverishness, with headache and nausea. It is sometimes rather a sharp disease; but there is nothing dangerous in it, though the general excitement is great. It is said that when it occurs about the hairs, "lichen *pilaris*," it is often chronic. When it occurs in the severe form, called "lichen *agrius*," there is a great degree of itching, and a great degree of heat; and the inflammation is sometimes so violent, that you have vesicles and excoriations. This severer form of the disease, is sometimes preceded and accompanied by nausea, pain at the stomach, and pain of the head; and may last several weeks. It is much more frequent in women. It corresponds with "strophulus *confertus*." This variety is sometimes connected, but only locally and temporarily, with a pustular disease, called *impetigo*; with another, in which serum is secreted;—*eczema*; and another, in which scales are formed, called *psoriasis*; and sometimes it will degenerate into them. Sometimes, though rarely, the papulæ are livid; and the variety is called "lichen *lividus*." More frequently it is united with petechiæ; or dark spots of congestion. There is one kind of this affection, called "lichen *tropicus*," which is attended by a great degree of tingling. You will find this mentioned by all writers on the diseases of hot climates; and it is described by them as a most distressing affection. When a person is subject to this variety of the affection, the moment he goes to bed or takes

exercise, he has a most violent pricking of the skin, called *prickly heat.* It is called lichen *tropicus,* from the disease occurring in tropical climates. It is not easily repelled; and its sudden cessation is generally the *effect,* not the *cause,* of an internal affection. The "prickly heat" is thought to be a sign of good health. Sometimes the papulæ, in this disease, are attended with little bumps, like gnat or bug-bites; and then it is called "lichen *urticatus.*" It affects the neck and face,—particularly in spring and summer; and is attended by a stinging pain. But though there are bumps or wheals, still there are papulæ. It chiefly affects the neck, face, and hands. It corresponds with "trophulus *candidus.*"

Lichen will sometimes be preceded by nausea, vomiting, and pain of the head; and sometimes these will disappear as soon as it comes; while, at others, they will continue with it. It sometimes takes place at the end of certain cutaneous diseases. It particularly occurs after fever and catarrh; and, it is said, even after peritoneal inflammation. Some persons regularly have it annually; some have it at the beginning of the summer; some in autumn; and some are so unfortunate as to have it in both. I know a young lady who had it every spring and every autumn. It was observed by the Romans, who called it *Sudamina;* and the Greeks, who noticed it, called it Ἴδρωα. In this country, in hot weather, we often have a great tingling of the skin.

In all these forms of the disease, the treatment is to be the same as in the strophulus of children. If there be great excitement of the system, and headache, one would bleed. If a patient have a strong pulse, even *without* excitement, you will find that by far the shortest way is to take a little blood from him, put him on low diet, purge him well, and order him the warm bath. You must not allow the *hot* bath; for, if you apply much heat to the skin, you will in a great number of cases make matters worse. Just as in the case of the strophulus of children, purgatives (especially combined with alkaline matters) given two or three times a-day, and low diet, will usually remove lichen; but if the disease be severe, certainly the shortest way is to bleed in the arm in addition, even if the severity of the disease do not *indicate* this measure, yet if the constitution of the patient and his pulse *justify* it, I should still have recourse to it.

For the relief of the parts themselves, which are tingling and itching, I think you will find the chlorides of lime and soda answer better than any thing else. Many persons use vinegar for this purpose; and it answers pretty well; but I think that, in all cases where there is itching of the skin, if that organ be sound, and the chlorides be properly diluted, they are by far the most serviceable. I have known some persons relieved by the application of prussic acid, of the strength of a drachm to eight ounces of water;—sometimes stronger. I had an old man at St. Thomas's Hospital, lately, with great inflammation of the legs, connected with varicose veins;—which is certainly not exactly this disease; but nothing relieved him except prussic acid;—one ounce to a pint of water. Sometimes,

however, this will produce heat and tingling; and it is best not to use at first more than a drachm or two drachms to a pint; but, if this produce no effect, you may increase it; but now and then there is great heat and dryness induced by applying it in greater strength. You will find that bleeding at the arm, low diet, and purging, are the best general means; and, as local remedies, either vinegar, prussic acid, the chlorides, or plain water, warm or cold.

PRURIGO.

In prurigo, the papulæ are very little discoloured;—being nearly the same colour as the skin; but they are larger than in lichen. They are particularly characterized by itching; and the itching is a far more striking symptom than the eruption itself. That is not the case in the other two varieties, except in that form called "lichen *tropicus*." In the latter there is a very severe eruption; whereas, in prurigo, the eruption differs but little from the adjoining skin. The papulæ also vary from those of lichen, in not being so pointed. So severe is the itching, that people scratch themselves, till they rub off the surface of the papulæ. A little blood exudes;—a very minute portion; and then it forms a little black crust; so that the papulæ will have an artificial black top; and, from scratching them, water will ooze as well as blood. This, however, is incidental; and has nothing to do with the complaint. If the patient will continue to scratch, he may cause these papulæ to be converted into vesicles; if he scratch still more, suppuration will take place, and he will have pustules; and the skin may even be brought into such a state, that it will crack, and become indurated and hypertrophied. This is a chronic disease. Lichen and strophulus are sometimes chronic, and sometimes acute; but prurigo usually lasts a considerable time, unless properly treated at an early period.

If the disease occur in the mildest form, it is called "prurigo *mitis*." This chiefly affects the young. The disease altogether, in every variety, affects both the young and the old; but that called "prurigo *mitis*" principally affects the young; and occurs particularly about the spring or beginning of summer. It is said, by some, to degenerate into the itch; but others deny this. Sometimes the eruption is scarcely visible at all. There is intense itching, but it is rather difficult to find out any eruption. It will remit; and sometimes it will *intermit*;—come and go entirely. If it be very severe, there is an epithet added to the word "*prurigo*," to signify great intensity; and, from the itching resembling so much the bite of an ant, it is called "prurigo *formicans*;" which is a very severe,—I may say a *dreadful* disease. It affects adults at all periods, but not children; and it occurs in every part of the body, except the palms of the hands and soles of the feet. Occasionally it is preceded by feverishness, pain of the head, and sickness. There is a third form, which is confined to old age; and which is called "prurigo *senilis*;" and this is likewise a very severe form of the disease. I should sometimes be at a loss to distinguish between "prurigo *formicans*" and

"prurigo *senilis*;" for the former only occurs in old people. I think it would be better to say, that prurigo is a disease which sometimes is mild, but now and then severe. If it attack old people, it generally continues very obstinate, for a great length of time. Figure 1 (Plate vi) represents "prurigo *mitis*;" Figure 2, "prurigo *formicans*;" and Figure 3, "prurigo *senilis*." There are no scales, or scabs, or water; nor is there any pus.

This disease is not dangerous to life; but it is sometimes really a most dreadful disease;—dreadful, I mean, so far as suffering is concerned; and, for what I know, it may injure the general health. I have known the intense suffering it occasions, sometimes cause imbecility of mind. The intense suffering has continued, month after month; and, indeed, year after year; and has produced such depression of spirits, and such exhaustion of mind, that persons have become imbecile,—really worn down; and a sort of fatuity has arisen from mere exhaustion. I once had a man come to me, in this state, at St. Thomas's; when I attended the out patients. He pulled off his coat, uncovered his bosom, and shewed me every part in an instant; —he was so quick in all his movements. He then pulled a comb from his pocket; and assured me that was the second comb he had bought; having worn out the first in scratching himself. I have no doubt this was true. The itching was most intense; and he had been in this state two or three years; so that there had been time to wear out a comb. About three years ago, I had a man who came to the hospital; and whose sufferings had been nearly as intense. The idea had not occurred to him of buying a comb; but he used his nails well in scratching himself. His mind was as much gone as that of the other patient. He was really falling into childishness.

This disease is sometimes local; attacking a particular part of the body only; and not being diffused. It affects, particularly, the scrotum of the male, and the pudendum of the female. The scrotum, from constant irritation,—from the patient everlastingly scratching himself, becomes scaly, and very much indurated. It will attack the prepuce; and then it is called "prurigo *præputii*." Sometimes it has occurred within the urethra;—"prurigo *urethralis*." It will sometimes affect the extremity of the rectum;—"prurigo *podicis*." The worst seat of it, however, is in the pudendum of the female;— "prurigo *pudendi muliebris*;" and there it is sometimes very violent, —very distressing; so that a woman cannot go into society at all. She cannot appear before men; nor, indeed, can she appear before strange *females*; in consequence of her being under the necessity of scratching herself. I have known women driven almost mad, with the vexation of finding that they were not able to pass five minutes, without scratching themselves violently. I saw one woman, who was obliged to get up several times in the night. She was unable to go to sleep; for, at last, the heat became so great, that she was compelled to get out of bed, and wash herself with cold water; and so she had passed every night, for months, when I saw her. The vagina and the inner surface of the labia, in very severe cases, become

thickened; and bumps of induration (small indurated portions) are formed here and there. They are not properly tubercles; but have a tuberculated appearance. When this occurs in females, it excites a desire of copulation; which, as they have told me, relieves it for a time; but in a little while afterwards, they are worse than ever. It is impossible for them to get relief, in this way, every moment; and I advised the woman to whose case I had just referred, and who told me that she lived separately from her husband, to use nothing but cold water. It is really, though not dangerous to life, a distressing disease; and women will cry, and absolutely wish for death, when they are labouring under it. I cannot conceive any thing more lamentable; and, if it occur to a modest woman, it is the most horrid sort of case that can come before you. It rarely occurs in females before the middle period of life. Dr. Willan says, that aphthæ may appear on the nymphæ, and internal part of the labia; and may be communicated to the glans, penis, and internal part of the male prepuce; that they are easily cured; and that these aphthæ, as well as "prurigo pudendi muliebris," often occur after the fourth month of pregnancy.

The mild form of prurigo may be mistaken for itch. I will not trouble you with the diagnosis now; but advert to it when I speak of itch. I may mention, however, that it will occur in every part of the body. It will occur in the face, as well as other parts; but the itch, I believe, will not. Prurigo, too, is not a *contagious* disease.

With regard to the treatment, supposing it to be the mild form of the disease, it is right to make the patient avoid stimuli of every sort;—pepper, mustard, wine, beer, &c. Many persons have a tingling, immediately on taking certain articles. If I take a grain or two of pepper, or taste vinegar, I have an itching of the scalp; and wherever I am I must begin to scratch my head. If I take opium, I have a violent tingling of the nose, for many hours afterward. Now all these matters, especially mustard and pepper, are likely to increase the affection. If a patient will bear it, it may be right sometimes to take blood. At any rate, it is proper to purge him moderately; and I should advise alkalies, as there is often an acidity in the stomach. But there is a remedy from which I have found greater relief, than from any other;—not in the *mild* form only, but also in the *severe*; and one of the men I have mentioned, was cured by it;—at least, he was so far relieved, that I could keep him no longer in the hospital. That remedy is colchicum. I am sure that if you purge with colchicum, you will find more benefit than from any thing else. In the mild form of the disease, undoubtedly, this is the best remedy. Patients should avoid going near the fire, or taking much exercise, so as to irritate the skin; but I am quite satisfied that colchicum is the best remedy you can employ internally. As to the itching itself, that is very much mitigated by diluted acids, such as vinegar; and also by the chloride of lime, or of soda. These produce a very great mitigation of the itching. You will also find relief, sometimes, from a fomentation of prussic acid. The woman

who was so bad from "prurigo pudendi muliebris," found great relief, for a time, from applying prussic acid. She used it, at length, to such an amount, and of such a degree of strength, that it produced giddiness and fainting; so that she could not stand it; and yet it did not cure her complaint. It appeared, at last, that the best thing was a cold application; and therefore she had a pail of water brought into her room at night, and used it incessantly. I believe this local prurigo will arise, occasionally, from some local cause of irritation. Worms in the rectum, will produce "prurigo podicis;" and a stone in the bladder, is sometimes attended with a violent itching of the prepuce. In women, it sometimes attends structural disease of the womb. It is right to endeavour to ascertain whether there is a local cause; and if there be, you must endeavour to remove it; but if you cannot find a local cause, then I believe the application of the chlorides, or prussic acid, or cold water, is the best thing. Some tell me that they have seen great relief from what is called "the yellow wash;"—oxymuriate of mercury and lime water. It is much about the same thing as using the chloride of lime. The French use sulphureous baths, and emollient baths containing gelatine; but I have no experience of them.

EXANTHEMATA.

We now proceed to another class of diseases; a class in which the redness is not confined to spots, but forms patches. Such diseases as these are called *Exanthemata;* or (in English) *Rashes;*—a rash being an extensive redness of the skin. In these diseases there are not pimples or spots, but patches;—the same thing precisely, only of greater extent. They are defined by Dr. Willan to be "red patches, variously figured; in general running together (confluent); and diffused irregularly over the body; leaving interstices of a natural colour; and usually terminating in cuticular exfoliations, though sometimes disappearing without any such exfoliation." The former class of diseases (papulæ), you will remember, either terminated without any thing following, or induced a scurf. These, being a more extended redness,—being patches instead of pimples, are followed, not by scurf, but by an exfoliation of the cuticle. Large portions of cuticle separate; and therefore, instead of being branny or scurfy, it is in plates. These exanthemata often render the surface uneven, by elevating the portions affected. The brightness is variable; and sometimes, Willan says, extravasation occurs.

The chief diseases of this description are, in the first place, erythema and roseola; which I will unite together (or endeavour to do so) as I did lichen and strophulus. The next is measles; the next scarlatina; and then comes urticaria. Some of these are contagious, and others not. None of the first class were contagious; but two of these are;—namely, measles and scarlet fever. These two usually occur but once during life. The two first of these affections are very slight;—just like lichen and strophulus; and are not contagious.

ROSEOLA.

The first of these is roseola; and it is worth knowing, merely lest you should mistake it for something else. Roseola is described as having rose-coloured patches; without wheals, without little bumps, without papulæ, without minute elevations of the skin; and these patches are circular or oval. (Plate xxv.) It occurs at all ages; but especially affects children. When you see children with little rosy patches of the skin, circular or oval, the disease is called *roseola.* There is sometimes an itching attending it; and sometimes only a tingling. If it occur in children, it is called "roseola *infantilis.*" The patches are of all sizes; and sometimes they are diffused very generally over the body; but if not, still they are pretty numerous. It is a trifling eruption, and seldom lasts more than four or five days. If the patches be round, it is called "roseola *annulata.*" Sometimes there is a little feverishness, or a little irritation of the bowels; and those symptoms generally occur from two to seven days before the eruption appears. It is usually a superficial complaint; very innocent to the body; very short in its duration; and, after it, there is scarcely any exfoliation. The character of this eruption is said (by Rayer) to be that, after pressure, the redness returns at all points. In scarlet fever, if you press the rash, the redness, on removing the finger, returns from the circumference of the part; but, in roseola, every part recovers its redness at the same time. I never made the observation myself; and therefore cannot answer for its accuracy. Now and then it might be mistaken for scarlet fever; but, he says, that you may distinguish between the two affections, by noticing what I have just stated.

This is a disease of so short a duration, that it never becomes chronic, unless there be many attacks of it;—unless it be remittent. If it come and go, a patient may be troubled with it for a length of time; but the disease never remains incessantly, for any long period. In the spring and summer, it will no doubt frequently arise from the heat of the weather; but frequently it happens without any evident cause whatever. If it occur in the summer, it is called "roseola *æstiva*;" but if it occur in the autumn, it is designated "roseola *autumnalis.*" If it occur in small-pox, it is called "roseola *variolosa*;" if in cow-pock, "roseola *vaccina.*" It has various names, according to these circumstances; which names it is quite nonsense to attempt to remember. Occasionally you will see such rosy patches in continued fever; but still it is called *roseola.* The redness of the skin which you observe in gout, is also called *roseola.* The redness of the skin which you observe in rheumatism sometimes, especially of the fingers, bears the same name. Occasionally the mucous membrane of the throat, more particularly the pharynx, suffers the same degree of redness. It would appear that, occasionally, something of the same nature occurs in the stomach and intestines. At least, when there is this eruption of the body, there will be a violent degree of heat in various parts of the abdomen.

After inoculation for small-pox, this little redness will sometimes take place before the pustules appear. They say this happened in one out of fifteen cases; and inoculators used to imagine, that it betokened a mild form of the disease; but if the redness was general and deep, and there was much pyrexia, they supposed it indicated that the disease would be severe,—would be confluent. The roseola which occurs in cow-pock, generally appears on the eighth or ninth day.

This disease requires no treatment whatever; unless you choose to lower the child's diet, and give it a dose of physic. You will find it represented in Plates xxv, xxvi, and xxvii. The great importance of knowing this rash, is not for the sake of curing it; but in order to distinguish it from another disease; for many children have been said to labour under measles, or scarlet fever, when they have only had this redness of the skin. You will hear of children having had measles or scarlet fever, half a dozen times; whereas they had merely this little redness of the skin, called *roseola.*

ERYTHEMA.

The next disease is separated by writers from *roseola*, and is called *erythema.* It is said to consist of red patches, or diffused redness. It often affects the subcutaneous tissue; so that there is a little swelling. To shew you the absurdity of separating these two diseases, I may mention that one is called "red patches, variously figured and irregularly diffused;" and the other is called "red patches, or diffused redness." I am sure it is frequently impossible to distinguish between these two diseases. The different varieties of erythema are much more unlike each other, than many cases of erythema and roseola. All that you have to remember is, that a little redness is called either *roseola*, or *erythema;* that roseola occurs particularly in infants; and that erythema occurs sometimes in rather a severe form.

Erythema may be transient, and last only about a week; and then there is furfuraceous branny desquamation. Sometimes it is local, and will arise from friction; and then it is called "erythema *intertrigo.*" If the skin in the groin or arm-pits be irritated, the motion of the parts increases the irritation; and if they be accidentally irritated by the dress, then the redness will increase; and this is sometimes called *intertrigo.* However, when this redness is slight, it is called "erythema *fugax.*" If the skin be very smooth, it is called "erythema *læve.*" If it have a distinct margin, it is named "erythema *marginatum.*" If there be small papulæ, it is designated "erythema *papulatum.*" If, instead of papulæ, you have slightly elevated tubercles, it is called "erythema *tuberculatum.*" If you have large bumps, it is then designated "erythema *nodosum.*" You have seen legs become bumpy and red; and that is an instance of "erythema nodosum." You also well know, and you will remember, the shining appearance sometimes of an inflamed œdematous leg; and that state is called "erythema læve." You may as

well say that there is erythema with a smooth shining surface, as trouble yourselves to recollect that it is called "erythema *læve.*"

This disease is now and then preceded by a little illness; which disappears when the eruption occurs; and now and then there may be a little feverishness during the attack; but for the most part it is a trifling complaint; or is consequent upon some other affection; Rayer considers that, when there is an internal affection, the disease is the sympathetic effect of the internal irritation;—that an irritation of the stomach or intestines is the real cause of the disease; and not that this disease itself is at all capable of affecting the constitution. When persons are out of health, there will be an external inflammation, not attended with any secretion; and that inflammation is called *erythema.*

But there is a form of this disease which is very obstinate; and you are sure to be consulted upon it. It appears in great patches, chiefly on the legs, and particularly in females. If you draw your fingers along the legs, you will find bumps very hard and red. It is called (as I before said) "erythema *nodosum.*" Plate xxii, Figure 1, represents this disease. It is really worth looking at; because it is accurately delineated in this plate. You will be continually consulted respecting it, and asked to give it a name; and if you cannot you will be considered a goose. Of course patients place the more confidence in you, if they fancy you know what is the matter with them; and it is very natural that they should do so. It is very easily cured, if treated properly at first; but if it be neglected, it is a very obstinate affection. Now and then, instead of bumps, you have tubercles, in the common acceptation of the word. This is represented in Plate xxxi, Figure 1. This affection, as I just now said, is called "erythema *tuberculatum.*" You see that these are all superficial rednesses. The tubercles are like peas. It is worth knowing; because patients die when they have it, though I do not know that they die *of* it.

The best treatment for this disease, is anti-inflammatory;—in fact, just the same as for all the others that I have mentioned. If the patient's strength will bear it, you may take away blood with advantage; and you generally find it buffed and cupped. You may also purge the patient. In fact, you may treat him on the antiphlogistic plan; either purge him alone, or bleed him at the arm as well. If there be anasarca of the legs, you may favour its removal by posture. You cannot expect the erythema to disappear, while the leg is hanging down. It arises from the distention of the part; and if the distention of the part be allowed to remain, nothing will remove the erythema. The general rule, however, is to treat erythema as you would any other inflammation. In the erythema which occurs in the legs of females, you will not only find very great use from these measures;—that is to say, bleeding in the arm, the application of leeches to the neighbourhood of the part, and active purging; but you will find more benefit from colchicum than from any thing else. I have had great experience in the treatment of this

disease; and I know the comparative efficacy of combating it by purging with common cathartics, and by purging with colchicum. You will find colchicum the best medicine you can employ, not only in severe prurigo, but in this species of erythema.

I mentioned to you that, in one variety of this affection, there was great redness of the skin, with hard lumps;—not so large as in "erythema *nodosum*;" but small lumps about the size of peas, or small-pox pustules. This is a state of the parts which I have never seen but once; and then I confounded it with "erythema *nodosum*," and thought nothing of it;—imagining that I could cure it. The lumps had no sooner disappeared, than the man became paralytic; and then hectic; and died in an extraordinary way, with symptoms of various diseases. I was not then sufficiently aware of the distinction between "erythema *nodosum*," which is an innocent disease, and "erythema *tuberculatum*;" but Dr. Willan says that he had seen only three cases of "erythema *tuberculatum*;" and all of them proved fatal. Two of his patients died of hectic, just as mine did; and one died of subsequent hydrocephalus. My patient died hectic; and if he was not hydrocephalic, he had affection within the brain; for he was paralytic. Dr. Bateman says that he never saw the affection. The treatment, I presume, would be the same as for "erythema *nodosum*;" bleeding to a certain extent and colchicum. I gave it to this man; but, to my astonishment, he did not get well. Of course, this disease does not give rise to paralysis or hectic; but I presume it is one which only takes place in constitutions which are exceedingly bad;—which are strongly disposed to some internal disease; and when the patient is on the eve of labouring under it.

When you see patients with red patches on the skin, of this description, and with scarcely any complaint, you may be sure that the affection is erythema or roseola;—call it which ever you please. Now and then you have it very troublesome in females, and with bumps; and now and then you have the tubercular form; which is usually the prelude to a severe and fatal complaint.

URTICARIA

The next of the diseases in which the inflammation is extended in patches over the skin, is *urticaria*. I select it as the next because it is not a *contagious* disease; and, indeed, is almost always, a disease free from danger;—just like the three I spoke of in the class of papulæ;—namely, strophulus, lichen, and prurigo; and just like the two of which I have already spoken in this class;—roseola and erythema; except "erythema *tuberculatum*; which, although it will not itself prove fatal, occurs in persons who usually soon die of something else.

This disease, urticaria, is in plain English the *nettle-rash*. It is so called because the appearance is precisely that of a person stung with nettles;—*urtica* being the Latin for *nettle*. You find it spoken of by some writers under the term *essera*; which, I understand, is the Arabic name. I think Dr. Heberden speaks of nettle-rash under

that title. In this disease there are efflorescences, as they are called; —extended patches; but besides that there are wheals. I need not say that a wheal is a pretty hard elevation of the skin; such as occurs from a horse-whip applied to the surface of the body; but it is defined particularly by Dr. Willan, to be a rounded or longitudinal elevation of the *cuticle*. One ought to comprise more in it than that however. We might say, in general terms, "a rounded or longitudinal elevation of the *skin*;" but still we must add "not permanent; not containing fluid; and not tending to suppuration." Of course, if the *cuticle* be raised, (according to Dr. Willan's expression), there must be something under it. You would imagine there must be a vesicle, water, or pus; it is therefore, improper to say,— "elevation of the *cuticle*." The cuticle *is* raised; but you would have a wrong idea if you imagined, that the cuticle was raised from the other component parts of the skin. The cellular membrane indeed is raised, as well as the cutis; and there is a hard bump, and an extended efflorescence, or patch (or whatever you please to call it) around the bumps. This efflorescence is of a vivid red,—a very *intense* red;—sometimes really of a *damask* hue; almost the appearance which you observe in those persons said to have "claret-marks." Occasionally there are a few very small wheals; but sometimes not;— the *efflorescence* being the character of the disease; though, in the greater number of cases, in the midst of this efflorescence, you find these wheals; which look white in the midst of the red patches. There is an extreme itching;—that sort of itching which is called tingling; exactly as if a person were stung with nettles. To the eye of a bystander, and to the feelings of the patient, the state is just that of a person stung with nettles.

If the bumps be very hard indeed, they are much larger at the same time; and that variety of the disease has a particular name, and is called "urticaria *tuberosa*." It is sufficient to remember, that sometimes the bumps are pretty large and hard, and very painful; and if you choose you may remember, that when they are so it is called "urticaria *tuberosa*." These large ones, these thumping bumps, chiefly occur in the loins and legs, and are generally worse at night; subsiding in the morning, and leaving the patient weak. If it happen that these wheals and patches are numerous, and of irregular form and coalesce; it is called "urticaria *conferta*;" and these are said to occur chiefly in persons of a dry, swarthy skin, above forty years of age. If it so happen that the disease has been preceded or is accompanied by headache, nausea, gastrodynia, drowsiness, and pyrexia; it is called "urticaria *febrilis*." Very frequently, whether it is *preceded* by these symptoms or not, it is *attended* by them when it does appear. If they precede it they will still continue; but frequently they will come on only when *it* comes on. Generally, in severe cases, there is heat and thirst. The tongue is white, yellowish, and loaded; the epigastrium is tender; the pulse is full and quick; and now and then the disease will come on, like any other inflammation, with shivering. Now and then the internal symptoms, which

occur before the eruption, are relieved by it; or, at least, are diminished, or disappear; but they reappear when it ceases again. Frequently, however, these will all exist together;—the internal symptoms of feverishness; and the external symptoms of efflorescence and wheals.

This disease is sometimes so active, that the face is swelled, and the eyes are almost hidden. Persons say they can hardly see out of their eyes; and, in fact, you can see but little of their eyes; and every part around is swollen;—cheeks, lips, and scalp; and all are tense,—the nose among the rest. The eruption will vary in intensity, and vary in its situation, not only on different days, but at different hours of the same day; it will come and go several times in the twenty-four hours. Warmth will aggravate it; and, on the other hand, exposure to cold will do just the same. When a person undresses, and there is an application of cold air to a part of the surface which before was covered, it will frequently bring out the rash, and make it worse. On the other hand, if a person go into the other extreme;—if he stand near the fire, or take stimuli, he will be worse. I need not say that rubbing and scratching make things a great deal worse; but people will do so; and, on account of the pain, they really can hardly help it. This disease is often not confined to the surface. It affects the internal mucous membranes next the surface; and the submucous cellular membrane. You will often find the tongue, the fauces, and the throat swollen; so that the patient can perhaps hardly swallow. The irritation of the mucous membrane, in that quarter of the throat, sometimes occasions a degree of cough. I have frequently seen patients unable to swallow, and nearly unable to breathe. It is said (though I have never seen it) that, now and then, there is an irritation of the bladder, producing strangury; and sometimes diarrhœa is induced. The internal affection, in this complaint, is sometimes said to end fatally; but I presume this internal affection does not arise from the eruption. On the contrary, I imagine that it is the *general state* which gives rise to the *eruption*. The disease will last for a few days, perhaps a fortnight; and now and then there is a slight scurf afterwards. The cuticle, in consequence of the irritation, is separated from the parts beneath, and comes off in the form of slight scurf. This occurrence, however, is not a general thing.

Sometimes the disease is chronic; and is called "urticaria *perstans*." It is sufficient to remember that urticaria may be a chronic disease. The redness will go; but the wheals, perhaps, will remain. Now and then, instead of remaining chronic, it comes and goes for many months;—vanishing and recurring; and then it is called "urticaria *evanida*;" but I beg you will not trouble yourselves to remember these expressions. If you know that it comes and goes, or stays, that is sufficient; without knowing how authors arbitrarily choose to designate these varieties. Dr. Bateman says there is no pyrexia; but I know that there frequently is; and also an inflammatory state of the head and of the abdomen. It sometimes happens that the

eruption disappears, or only comes from time to time; and when the tingling comes between the appearances of the disease, it is then called "urticaria *subcutanea*." Perhaps you cannot well imagine a disease *of* the skin to be *under* the skin; but so it is called. It lies underneath; and teazes the patient without shewing its face.

Before I proceed to consider the *causes*, perhaps I had better shew you the *appearances* of the disease. It is an affection which people very often do not recognize. I know that it occasionally occurs in practice, that a patient is said to have any thing but urticaria, and is very much frightened; but it is easily recognized by the tingling and by the elevations or wheals. The affection is represented in Plate xxiv, Figures 1 and 2. You see that, in both forms of the disease, the wheals are slight. In the upper figure, there is a slight inflammation; and in the lower one, it is very great. It is as deep as damask, or "claret-marks." You sometimes see the redness with a few wheals; and people are often said to have erysipelas, when they have only this form of urticaria. There is frequently a swelling of the face too; so that some persons are very much alarmed. It sometimes occurs in children; and in them it may be more easily mistaken, at first, than in adults. It is often, in the first instance, mistaken for measles, or some other disease.

I believe that the most frequent cause of urticaria, is the application of cold; especially when the body is heated. It will frequently arise from cold applied to the surface;—sometimes cold and wet; but especially when the body is over-heated. It is, perhaps, sometimes induced by sudden heat. It will frequently arise from an emotion of the mind. It arises too from teething, and we continually see it, too, from certain ingesta. Some have it through *one* kind of food; and some through *another*. In some persons, almonds will occasion it; or rather the *skin* of almonds. It is not the *blanched* almonds that cause it, but the *unblanched*; so that it is the *external part* that produces the disease; and this it does in consequence of the skin of the almond containing hydrocyanic acid. The latter, in its medicinal form, will now and then have the same effect. Various kernels of fruit will give origin to it, in some people, in consequence of containing the same substance. Mushrooms, also, will sometimes occasion it. I suppose the mushrooms must be of peculiar kinds. Herrings, particularly *red* herrings, and shrimps, will likewise occasion it. Shell-fish are very often the cause of the disease; but I believe muscles produce it more frequently than other kinds. You hear of persons being poisoned with muscles; and they are said to swell. I imagine the idea of swelling from being poisoned, arises from this circumstance; that urticaria is produced by different substances; and when it is produced, the face often swells prodigiously, and sometimes even the whole body; and if persons have previously eaten muscles, they are sure to say they are poisoned. It is not worth the name of *poisoning*. So intense is the idiosyncracy of some persons, as to muscles, in reference to this disease, that a gentleman informed me he knew a woman, in whom urticaria was induced by

one tea-spoonful of the water in which muscles had been boiled. She always had urticaria if she tasted muscles; but having boiled some for her husband, and being extremely fond of them, she thought she might indulge herself with a little taste of them; and so she took a tea-spoonful only of the liquor; but it had the same effect as if she had partaken of the muscles. Crab-soup, which I suppose is much the same as the liquor in which muscles are boiled, will also induce the disease. Malt-liquor, white-wine vinegar, and common spirits, will, in some people, produce it. A medical man told me that his wife always had it if she took gruel. One of the most common causes, among medical substances, is copaiba. Many persons, on taking copaiba, are covered with nettle-rash. I had a patient in whom it was produced, in the greatest intensity I ever saw it, by the sulphate of quinine. I never knew this before. His eyes were closed; his face was so swollen, that his friends did not know him; he was in a most intense burning heat; and could scarcely breathe. Swallowing was impossible. His brother came to me, and told me of the circumstance. I wished to ascertain whether it was the sulphate of quinine; and I begged him to take only a grain. He complied with my request, and it had the same effect, only in a less degree. He then took a minute *fraction* of a grain. There was not more quinine than (as common people say) was "sufficient to swear by;" and even that produced a degree of uneasiness in his throat, and a certain tingling in his skin. I have known several persons, in whom the disease has been induced by laudanum;—in fact, by opium in any common form. I mentioned that, in my own case, whenever I take opium, I am sure, in two or three hours, to have an itching of my nose; which will not leave me quiet for several hours. The same substance, in other persons, will induce universal tingling of the skin, with bumps;—in fact, nettle-rash. Pepper, and various spices, will have the same effect. Pepper and vinegar occasion in me a great itching of the scalp. I once saw the disease induced, very violently, by a mixture of subcarbonate of iron with treacle: whether it was the iron or the treacle I do not know. External stimuli will induce it; and it may spread along the skin, so as to prevail to a considerable extent. Dr. Willan says he knew a person, in whom it was produced by a slight application of unguentum hydrargyri; and another who had it from rubbing the hands with oatmeal. It is worth notice that, when an irritant is applied to the skin, the effect is not always limited to the spot; but other parts, either around, or *to* some distance, or *at* some distance, may suffer. Croton oil often causes redness and vesicles, far beyond the spot of application. Tartar emetic, applied to the legs, often causes pustules in the genitals. For this fact I beg to refer you to a paper of mine, on Subcarbonate of Iron, in the thirteenth volume of the "Medico-Chirurgical Transactions."

With regard to the mode of treatment, the shortest way, if the patient's strength will bear it, is to take blood from the arm. Even if anything improper has been taken into the stomach, by bleeding

in the arm you produce almost instantaneous relief; and the patient will speedily get rid of the complaint. A friend of mine was taking copaiba, in consequence of his misdeeds; and next day was seized with an eruption all over his body. His face was swollen and burning; and his lips were so stiff, that he could scarcely move them to eat. The aperture of his eyelids became very small; his pulse was about 100, and full; he was in a great heat, and red all over. Before I saw him, he had taken an emetic to empty his stomach; but it was quite in vain. The capaiba had entered his system; and was there causing irritation. When I went to him, I immediately saw it was nettle-rash; and begged another friend, who was by, to put a lancet into his arm, and detract a quantity of blood. Before the basin was half filled, he felt relief; and as the blood continued to flow, he felt more and more benefit. He became paler and paler; the swelling of his face declined; and before evening he was tolerably well. He took a dose of physic to assist the bleeding; but I dare say he would have done without it. The venesection, notwithstanding the emetic had been fruitless, instantly relieved him. A short time afterwards, he found it necessary still to go on with the copaiba;—his other troubles not having ceased; and the same effect was again produced. He took no emetic that time, but was again bled; and the disease instantly disappeared. He had no further trouble. However, if you are sure that the cause is still in the stomach, in consequence of the short time which has elapsed since it was taken, it would be but common sense to empty it; but I confess, if the person were of full habit, I should take away blood first; for you will find that a most speedy mode of cure. You must, as in all other inflammatory complaints, regard the constitution of the patient on the one hand, and the intensity of the disease on the other. If you take away blood, you will cure the disease in perhaps a twentieth part of the time that will be required, if you trust to low diet and purgatives. I would, in every case, back bleeding by low diet and purging. In the chronic form of the disease, the patient should avoid stimuli, and adopt antiphlogistic regimen. He should avoid eating anything that can excite either his body or his mind; and if the pulse be strong, he should unquestionably lose a small quantity of blood. The warm bath is said to relieve the affection; and in some cases bathing has done good. Bark and acids are praised. All the cases, however, that I have seen, whether acute or chronic, have been best and most successfully treated by venesection, and common antiphlogistic measures. In the case of the lady who had urticaria from taking the subcarbonate of iron in treacle, for a couple of days, the eruption began one Sunday morning; and it was supposed that she had got scarlet fever. The eruption was just of the appearance you saw in the lower figure; of a damask red, with bumps; and it came out suddenly. She was in the greatest agony. Her countenance expressed great distress; but though I imagined it arose from the medicine, I did not give her an emetic. I had her bled; and while her noble blood flowed (for she was a peeress) the symptoms de-

clined; and when the arm was tied up, there was no redness to be seen. No pains were taken to get rid of the offending matter; which, in all probability, was the cause of the disease. I did not know the use of bleeding, in this complaint, when I began practice; but I found it mentioned in authors. It seemed rational; and I adopted it in every case afterwards, where the pulse would allow it. In the chronic form, if you find any other disease present, you must endeavour to remove that. The urticaria may arise from chronic enteritis or gastritis; and that ought to be remedied in the usual way; which usual way is to apply leeches to the abdomen, or adopt general bleeding, &c. You may get great and deserved credit for curing this disease; or you may find it very obstinate. The secret of the cure generally lies in bleeding, and adopting antiphlogistic means. Among local applications, the chlorides, prussic acid, or nitric acid, best alleviate the itching.

RUBEOLA.

The next disease of which I shall speak (the measles) is a severe affection; — is frequently fatal. It is called, among the medical men of this country, *morbilli*, or *rubeola*. We have adopted the expression "*morbilli*" from the Italians; who so named the disease from its being a less kind of plague;—the "minor plague,"—the "little disease." The expression "*rubeola*" was formerly applied to scarlet fever and measles in common; as well as to other diseases. In fact, it was Sauvages (the first writer on Methodical Nosology) that restricted the term "*rubeola*" to *measles*. The word "*rubio*," from which it comes, is Spanish; and it was first written "*rubiólo*," as it is pronounced;—the accent being placed on the *o*.

This is a contagious and infectious disease. It chiefly affects children; and is more severe in them than in adults. There is very rarely an indisposition to it; for you seldom meet any one that will not take it. The indisposition is less frequent than the indisposition to small-pox. It rarely occurs more than once; but sometimes it does. Dr. Baillie, in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge," describes eight cases of its occurrence more than once. When it does occur more than once, it is generally when it prevails as an epidemic disease. By "epidemic," I do not mean *contagious*. The word "*epidemic*" has been attempted to be restricted to those diseases, which prevail over a number of persons, without any contagion in the atmosphere; but the word relates to diseases that prevail temporarily over many people, without a local cause,—be it contagious or not contagious. It is said that measles have been observed at birth. Hooping-cough, I mentioned, has been heard at birth. Children have been frequently born with the small-pox; and it is said that children have been born covered with measles. It chiefly prevails in winter and spring. It is very well characterized. It has very peculiar symptoms; and is a disease that hardly any one, I think, can mistake. It is almost always ushered in by catarrhal symptoms;—that is, by a

flushing of the face; redness of the eyes; heaviness of look; a "running" of the eyes and nose; soreness of the throat; sneezing; a hoarse and sounding cough;—a cough which old women, who have been much amongst children, describe as the "measle-cough." I cannot describe it. I can only say it is a *hoarse* cough.

These catarrhal symptoms will sometimes last *two* days, and sometimes *twenty*, before the cutaneous affection shews itself. But, in general, it is on the *fourth* day that it appears;—sometimes as early as the *third*, sometimes on the *fifth*, and sometimes on the *sixth*. It is generally upon the face that the cutaneous affection presents itself. It appears as a rash on the forehead and the chin; and thence it spreads all over the face. The next morning it is found to have spread, not only over the face, but over the breast and trunk, and upon the extremities. On the fifth day, the disease has pretty well covered the body; and it is on that day that the face is most vivid. On the sixth day, the eruption is pale on the face, and most vivid on the body; and on the seventh day, it begins to disappear in the latter situation. The disease altogether is of about seven days' duration. The catarrhal symptoms appear for four days; upon the fourth day the cutaneous disease appears; and this lasts three days;—making seven altogether. But, now and then, children have catarrh for two or three weeks; and then, in the midst of the catarrh, without any previous additional symptoms, except perhaps an increased intensity, the cutaneous disease shews itself. Now and then, on the back of the hand, there are patches, which did not appear before the sixth or seventh day of the fever; and in the remote parts of the body, the redness occasionally does not come on till that time; and then the eruption in these situations does not decline, perhaps, till the eighth day. On the ninth day, there is only a slight discolouration left;—a sort of brownish appearance. The colour, in this disease, is by no means so vivid as in roseola; and as in scarlet fever. When it is all over, if the inflammation have been pretty extensive, there is a furfuraceous desquamation. This, then, is the course of the disease.

When the affection first appears, there are only, at the utmost, little red dots, nearly circular. They are scarcely perceptible, and rather less than the spots of flea-bites. They become more and more numerous, however; and coalesce into patches. All the exanthemata begin and extend in this way. The patches which are formed in this disease, you must remember, are of an irregular figure; and frequently assume a semicircular or crescent form. This is characteristic of the disease, and is worthy of notice;—not that the diagnosis is often at all difficult; but if it *be* difficult, you may be assisted by remembering that the patches in measles affect a semicircular or crescent form; that, in the midst of these patches, there are circular spots; and that, around the patches, are spaces of the natural colour. Upon the face the disease is, of course, the most severe. The skin of the face is finer, and more abundant in red vessels, than

that of many other parts; and there it is that the effects of inflammation are most severe, from these circumstances. The skin is not smooth, but roughened; so that if you pass your finger along it, you will find a little roughness;—hardly worth the name of *roughness*, perhaps; but an *inequality*. Occasionally, if the inflammation be severe, this is observed in other parts of the body. Occasionally you will find the red dots more or less hard and elevated. Notwithstanding the disease is characterized by patches, the inflammation may be so intense as to cause the face to swell, and the eyes to be closed; nay, the symptoms may be so severe as to cause little collections of water, the size of millet seeds, which are called *miliary vesicles*; and sometimes there are papulæ on the hands, wrists, and fingers;—elevations of the cuticle, having a distinct roughness, in the midst of the patches; so that while the patches give to the feel a sensation of being elevated above from the surrounding skin, in the midst of these there will be another roughness, arising from the papulæ. When you hear a child sneeze and cough, and see these crescent-semicircular patches (represented in Plate xix), you may be sure it is the measles. It is on the face you usually see the disease best characterized. You may mistake it on the arms, hands, and body; but you can hardly do so on the face. It is very important to make a correct diagnosis here, although the disease may be of a slight character; because if you tell a parent that the child is about to have the small-pox, when it is going to have the measles, of course you will be thought no doctor. Sometimes the spots will go down as fast as they appear.

It is almost constantly observed, in this disease, that the cartarrhal symptoms are not much lessened on the appearance of the eruption. You will find it often said by authors, that when the eruption comes out in cutaneous diseases, the internal symptoms are relieved. We all meet with this occasionally; but in a great number of cutaneous diseases I have seen the internal symptoms not alleviated by the appearance of the external. In measles, however, it is a well-known fact, that so far from their being an alleviation of the internal symptoms, they are more frequently aggravated than not; at any rate, in general, they are not mitigated. When the eruption comes out, the catarrh is confined perhaps to the bronchia. It appears that the catarrh is more or less bronchitic; for there is an affection of the superior parts of those tubes. But frequently the irritation of that part of the membrane below the larynx increases, so that you have decided bronchitis. Sometimes you will have an affection of the substance of the lungs (peripneumonia); and sometimes of the investing membrane (pleuritis). Frequently, when the measles are over, they leave chronic bronchitis, chronic peripneumonia, chronic pleuritis, or even phthisis. They frequently seem to give rise to tubercles. Frequently, too, there is left after measles a chronic diarrhœa; which is generally of an inflammatory character; frequently inflammation of the eyes (ophthalmia); ear-ache; running of the ears (otorrhœa); deafness. Frequently there is disease of

the mesenteric glands; and frequently, after the disease, will come chronic cutaneous affections; such as ecthyma, rupia, porrigo, boils, aphthæ, and many other things. In fact, there is no end to the mischiefs that measles leave behind. They may recede suddenly; and then internal inflammation take place of the lungs, or within the abdomen, or in the head; but it is chiefly in the chest that inflammation occurs, when the disease recedes. It is not by any means certain, that the retrocession of the measles causes these symptoms. It is just as probable that, in many instances, the occurrence of the internal disease puts a stop to the external. It is a great mistake to suppose, that the retrocession of an eruption causes internal disease, in every case where such internal disease occurs. There can be no doubt that the occurrence of another disease, in the *internal* part of the body, will put a stop to, or suspend a disease, which has previously been going on in an *external* part; but it is a fact that, when measles suddenly disappear externally, for the most part there is some internal affection.

The treatment of the disease consists, in ordinary cases, of mild antiphlogistic diet and the other regimen. You must keep the patient cool; but not cold, lest you should induce bronchitis. You must keep him at a pleasant temperature. It was formerly the custom to keep children hot, lest the measles should go in; the consequence of which was, that it kept up an irritation of the whole system, and kept up any bronchitis that might be present. On the other hand, I should not aim at keeping the patient cold, lest there should be bronchitis induced in this way. An intermediate plan seems to answer best. Some have recommended cold affusion in this disease; but the tendency to bronchitis is such, that I have never practised it, and I would not recommend it.

From the catarrhal symptoms in this disease, and their great disposition, on the appearance of the eruption, to become severe, you will find it necessary always to direct your attention to the state of the chest. It is always necessary to observe, carefully, whether there is peripneumonia, or bronchitis, or pleuritis, or any other *itis* of the chest; and to treat it just as if no measles were present;—to take blood from the arm or the jugular vein, or apply leeches, just as you may think proper. One would not pay such great attention to these symptoms before the eruption occurs; but if they be severe when the eruption comes out, blood should be taken. Leeches generally answer; but if the child be large, you might take blood from the jugular vein, or the arm. Moderate purging is proper, and low diet. The patient must be treated on the antiphlogistic plan, according to the degree of inflammation. If the eruption does not come out, or recedes, you should put the patient into the warm bath; but you should remember that this is most likely produced by some internal disease; and that internal disease, in nine cases out of ten, is inflammatory; and in eight out of that nine it is situated in the chest. The best mode to bring out the measles, again, is to lessen the internal disease. The measles will sometimes be suspended

for many, many days, after appearing on the surface. They will recede in consequence of the internal inflammation; you must subdue that; and then, frequently, they will re-appear. This is a very curious circumstance. Now and then, there may not be internal inflammation. There may be mere debility; and then it is necessary to give stimulants;—ammonia and wine. When there is diarrhœa, it generally requires antiphlogistic treatment. The diarrhœa is generally troublesome, when the disease is over; but it is important, in all cases, to press upon the abdomen, and see if there be any tenderness. In a large number of cases, you will find tenderness; and the diarrhœa is only to be subdued by sinapisms, leeches, &c. Sydenham pointed out that the diarrhœa was inflammatory; that opium and opiates were improper; and that venesection ought to be resorted to. Venesection is out of the question, in many cases; but it is sometimes proper. However, this is no general rule. You see cases where there is so little inflammation, that astringents and opium will cure the disease; but frequently they are not to be trusted to alone. In some you must unite this plan with the remedies for inflammation; in others you must solely treat inflammation, and the diarrhœa will cease. This is a most important point in practice, although it is simple; and unless you carefully attend to it, you may do harm when good might be effected. The internal affection may be the consequence of the measles receding; but, in a great number of cases, it is the internal affection that puts a stop to the progress of the disease on the surface.

Infants, or at least children, are thought to be much more susceptible of the disease than adults; but infants at the breast are certainly not so susceptible of it as others. It is not at all an uncommon thing to notice the disease in a family of children; all of whom have it, excepting one which is at the breast. There is no doubt that *extreme* infancy is not so disposed to the disease, as *later periods* of infancy. It is considered, however, that infancy at large (childhood, and the young adult period) is more subject to it than the full adult period; and much more so than old age. In considering this question, we ought to reflect on the circumstance, that although fewer adults have it than children, yet it is a disease that occurs generally but once; and it is possible that the reason why it is not seen in adults is, that almost all adults have had it when children. That may be the reason. To ascertain the fact fully, we ought to have a number of adults who never had the disease; and expose them with an equal number of *children* who never had the disease; and see how many of each are affected. And still if a smaller number of adults escaped than of children, even that might not be satisfactory; because those adults probably did not have the disease in infancy, owing to a positive indisposition; and that indisposition might still prevent them from taking it. We can draw no inference from the number of persons who have the disease in childhood; as is usually the case. Dr. Babington, I have heard say, has seen measles occur after sixty years of age; and it is a fact that we may see small-pox

after seventy. Some children (as we before remarked) are said to have been born with measles; and others have had it at a very short period after birth; but, as a general rule, the extremes of age are very unfavourable to this affection.

The longer the premonitory symptoms and the general indisposition occur, before the appearance of the eruption, and the more severe they are, the more severe, generally speaking, is the disease itself. The affection too, is usually more severe in the *cold* than in the *warm* months. Sometimes, in the severe form of the disease, there are, about the fourth day, small dark patches in the mouth, on the hard and soft palate, upon the tonsils, and upon the uvula;—the mucous membrane being affected as well as the skin.

The exciting cause of the disease is, indisputably, a peculiar contagion; and this has been communicated by art;—the disease has been conveyed by inoculation. Experiments of this kind were made many years ago, by Dr. Home;—the father of the present Professor; and himself Professor of Materia Medica in the University of Edinburgh. You will find his experiments related in a work of his, called "Clinical Facts and Experiments," published in 1758. Many have thought but little of these experiments; but, in 1822, an Italian physician (Dr. Speranza) in the territory of Mantua, repeated them. He inoculated six cases, and afterwards himself, with the blood taken from a slight scratch in a vivid papula. In a few days the measles appeared; and went through their course mildly and regularly. This encouraged him to make further experiments; and he says they were all successful. Occasionally the measles do produce little vesicles; and it is certainly likely that these vesicles contain the contagious matter in a concentrated form. Many who have attempted to inoculate for measles have failed; but that measles *have* been communicated by inoculation, there can be no doubt; and as the disease, when produced naturally, is so severe; and when produced artificially, so slight; and as most children have the disease, I think it a pity the subject has not been more attended to. There is not the same facility of producing this disease, as small-pox; but it appears a possible thing to communicate it; and there can be no harm in scratching a few children, and attempting to give them the measles, during the favourable period of the year; nor I do not see why, as most children have it, they should not be exposed to the contagion, by having the clothes of others labouring under measles placed near them, during the warm summer months.

The measles are sometimes said to take place on the skin, without any internal affection;—without any catarrhal symptoms; without running of the eyes or nose; without sneezing, heaviness of the head, or cough; and it is said that when the disease occurs in this exceedingly mild form, it does not prevent a second attack. This was mentioned by Dr. Willan; and, as an accurate observer, he was perhaps never surpassed; but Rayer will have it that this kind of disease is not measles at all, but only roseola;—that simple slight blush of the skin, which I formerly shewed you. Dr. Willan, how-

ever, says that he saw two distinct cases of measles,—indisputable measles, without any catarrh; and I myself attended a family, in whom several of the children had had the measles, with catarrh; and one of them had, at the same time, an eruption exactly like the others; and which was pronounced, by the medical attendant, to be the measles. The rest of the family never had the disease again; but this one, a year afterwards, had regular measles. From this fact, occurring within my own knowledge, I cannot but think that Willan is right. If any one could distinguish between rubeola and roseola, it must have been Dr. Willan. Besides, all contagious diseases will occur in an imperfect form. The most intense contagious disease may be of unusual shortness, or of unusual mildness, or both; and may even want some of its symptoms. Small-pox pustules sometimes occur without any indisposition. Doubtless, measles is no exception to the general truth. When small-pox has so appeared, Willan says it may begin regularly, and be perfected on the eighth or ninth day from the first appearance of the pustules, *without indisposition.* In the same manner, measles will sometimes appear, and proceed to perfection in a few days after the eruption, *without catarrh.*

The measles are sometimes attended with a darkness of the skin. About the seventh or eighth day, the rash suddenly becomes yellow, or livid. There is languor and quickness of the pulse; but no inconvenience arises; and the whole ceases in a week or two. It does not appear that there is any danger, from the mere lividness of the patches in this disease. Many eruptions of the skin, when they subside, become of a dingy or yellow colour, and without any danger whatever. There is merely a little change of colour, which is quite independent of the present indisposition. So it happens in measles. The dinginess is more intense than usual; the part becomes exceedingly brown and yellow; but this generally ceases after a week or two. Perhaps the blood is in a state approaching to stagnation;—the circulation not going on in the natural way. This is called "rubeola *nigra.*" But it is said that measles sometimes do occur in a really typhoid state of the body;—that "putrid measles" do take place. Sir William Watson, who was physician to the Foundling Hospital, said that he saw this sixty years ago. Others think this was an error; because (like Morton, a cotemporary of Sydenham) he did not distinguish measles from scarlatina; and proposed to banish the latter word as superfluous. Indeed, the original writers on measles all consider it and small-pox as the same disease, in different forms. However, Dr. A. T. Thomson declares, that he saw a case in 1804, where the languor and state of the pulse were alarming; and the skin rubbed off like a moist cobweb; but the patient recovered by the use of wine and cordials. I never saw this form; but the other (rubeola nigra) is not very uncommon.

In Plate xx, you will see a representation of measles without catarrh; which is said not to give impunity from the disease afterwards. Still I see nothing peculiar in the eruption. You observe that there are patches of a semicircular form. If a child have

measles without catarrhal symptoms, it is well to tell the parents that it may have an attack again. If you do not adopt this method, the family will say, "Mr. So-and-So said the child had the measles; but it never had; or it would not have them now." It is therefore well to save your character. A second attack of measles is possible, in any circumstances; but if they occur without catarrh, it is almost certain that the patient will have them again. In Plate xxi, there is a representation of the dark-coloured measles; which Willan calls "rubeola nigra."

With regard to the time at which the disease occurs after exposure, Willan says that he knew a person who had had the measles, and became convalescent; and his clothes infected a child in the country; and that the child had the eruption sixteen days after being first exposed. I suppose the usual period is from five days to a fortnight; but most probably this varies, as in most other contagious diseases.

With respect to the treatment of measles, the first point is to attend to any internal symptoms of inflammation that may exist. A large number of cases will do very well, without any medicine at all. The child cannot eat; and therefore, if not recommended by the parent, it will not take any thing to do it harm. It is more inclined to take plain water, milk, or milk and water, than any thing else. It is right that the patient should be kept *cool*; but it is rather dangerous to keep it *cold*. It should be kept in a *moderate*, but by no means in a *stimulating* temperature; for heat would do great harm, and aggravate any disposition to bronchitis; but I do not know that there would be the same propriety in exposing the child to cold air, that there is in small-pox and scarlet fever; owing to the great disposition to bronchitis. I do not think it would be right to bleed, generally or locally, to *prevent* bronchitis. It is time enough to bleed when the bronchitis begins. If the child be young, the moment there are symptoms of an inflammatory affection of the chest, you should apply leeches; but if the child be old, you should bleed from the jugular vein, or the arm. There is nothing more easy than to take blood from the jugular vein; unless the child be too fat. The treatment should be that of bronchitis. If the disease continue, you must look out for local inflammation; and if that local inflammation cause the eruption to disappear, and you can subdue it, then the eruption will return. The warm bath will be useful; and it can do no harm. Scarcely any affection occurs in a child, in which the warm bath is not of use.

The diarrhœa after measles, is generally of an inflammatory character; and is best treated by the application of blisters; or of a sinapism, if the child be too young for a blister. Blisters are very dangerous things to employ, in the case of very young children. I should prefer the application of a sinapism; because it is taken off in a moment; and great external irritation is quickly produced, and may be regulated at pleasure. It is not improper to give astringents, in the diarrhœa that follows measles; but you must look out for local inflammation; and if that exist, you must combine the astringents

with the proper remedies for inflammation; or employ the remedies of inflammation only. Measles are very apt to leave after them an obstinate diarrhœa, which ends in disease of the mesenteric glands; and a bronchitis, that is apt to leave a disposition to the formation of tubercles. You have chronic bronchitis, and then tubercles; so that children frequently die of phthisis; but measles often set up scrofula, both in the abdomen and chest. I need not say that, in the putrid form of measles, (which I have never witnessed), the opposite plan must be adopted; only we must take care not to mistake a blackness from bronchitis (from extreme congestion in the lungs), for a putrescent state of the body. When there is congestion of the head and chest, wine and tonics would be exceedingly improper; but I should think that a careful practitioner would not make the mistake to which I have adverted.

SCARLATINA.

The next disease among the rashes, of which I will speak, is scarlet fever; which is called, in medical Latin, *scarlatina.* Till the close of the eighteenth century, this disease was confounded with measles. Morton, who (as I have just told you) was a contemporary of Sydenham, thought they were mere varieties of the same disease.* In the middle of the seventeenth century, Sennertus asks why the disease is sometimes *small-pox*, and sometimes *measles*;† and Diemerbroeck, who published in 1687, asserts that measles and small-pox differ only in degree.‡ Such were those days of diagnosis. In 1769, Sir William Watson did not distinguish measles from scarlet fever.§ On this account, you heard, some have affirmed that Sir William did not see the putrid form of measles;—that what he saw was putrid *scarlet fever*; and that, as he did not distinguish between the two affections, he called it *measles.* Indeed Morton, who confounded the disease, wished the appellation "scarlet fever" to be banished altogether. He conceived that the two diseases (measles and scarlet fever) were but one; and he thought it a pity to use both terms; the word "measles" being quite sufficient to designate the whole disease. Bateman thinks that the year 1793, was the first in which an accurate diagnosis was made. Dr. Withering published an essay on Scarlet Fever, in 1788; of which essay the second edition appeared in 1793;‖ and Dr. Bateman considers, that the latter was the accurate date of the first correct division of these diseases. This must appear to us strange; now that the diagnosis between the two diseases is established with the most perfect facility. But so it is; and I

* "Opera Medica; nimirum, de Phthisi; de Morbis universalibus acutis; de Febribus inflammatoriis. Auctore R. Morton, M.D."

† "Opera Omnia;" 3 tom. folio. Paris, 1641.

‡ "Opera Omnia Anatomica et Medica, Isbrandi Von; emendata et aucta ab auctore; et recognita per Inn. de Diemerbroeck (Isbrandi filium)." Folio. Ultraj. 1685.

§ "An Account of Experiments on the Inoculation of Small-pox. By William Watson, M.D."

‖ "Account of the Scarlet-Fever and Sore Throat; by William Withering, M.D."

trust that those who live a hundred years after us, will be satisfied that we were an ignorant set;—that science will so advance, that hereafter our knowledge will appear perfect ignorance. You see that, at the present moment, people cannot settle how long cholera has existed;—whether it is a new disease or an old one. Some say that it sprung up a few years ago; and others assert that it has been known from time immemorial. It is just the same with scarlet fever. Some say that it was not known more than two hundred years ago; that it is not mentioned in the Arabian, not to say the Greek, writers; and that it came from Africa, and broke out, for the first time, in Europe, in Spain, in 1610. Willan says it was known to the Neapolitans, before 1500, under the name of *rossalia*, or *rossallia;* and that Ingrassia describes it under that name; that others called it *rosalia*, *robelia*, *rubiola*, *rubeola*, *rubeolæ*, *rubeoli* (from *robia*, madder; and *morbilli*, measles); and that the French used all these words for scarlatina; and in addition even *rugeole*;—terming measles *senession.* The word "*scarlatina*" was formerly "*scarlattina*;" and is derived from *scarlatta*,—"a red-coloured cloth."

This disease is characterised by a close and diffuse efflorescence of the skin; of a high scarlet colour; and affecting likewise the mouth and fauces. There are the usual symptoms of pyrexia, for about two days; and the second day of the pyrexia, generally, the eruption appears in some part. In the greater number of cases, I believe this is true; but occasionally the eruption will not take place till the third, fourth, fifth, or sixth day; and when the eruption does take place, it continues about five days. Scarlet fever arises solely from contagion. I use the word "*contagion*" in a generic sense. It is a disease that usually occurs but once during life; but I believe the exceptions to this rule are more frequent, than in the case of small-pox. Small-pox occurs twice, more frequently than measles; and I believe scarlet fever occurs twice, more frequently than small-pox; but I am not certain; for some persons do not make a sufficiently accurate diagnosis, between such a rash as roseola and scarlet fever. Still, however, it is by no means uncommon for persons that have had scarlet fever, to have a sore throat; if they be exposed to the infection of an individual labouring under this disease. It is by no means unusual for those who have about them children labouring under scarlet fever, to have a sore throat, characterized by intense redness; and that sore throat is sometimes very severe. Occasionally, persons who have had it formerly, or are recovering from it, have not only sore throat, (if strongly exposed to the contagion), but even spots like flea-bites, sometimes of a dark colour. Being of this infectious nature, the disease is often epidemic; but it is more prevalent at the equinoxes, than at any other period of the year. It occurs more frequently in children than in others; but the extreme of infancy is least liable to it; just as it is least liable to the measles. It differs, however, from measles and small-pox in this;—that persons generally are not so liable to it. Almost every body has the small-pox, unless they have had the cow-pock, and are thus prevented; but you will find a great number of persons that never had scarlet fever. It is

common to find persons that never had the scarlet fever; although they have been exposed to the contagion; but it is very uncommon to find persons that have not had the small-pox (or the cow-pock) and measles. I have been exposed to the scarlet fever often enough; but I never had it; though I have had small-pox, measles, and hooping-cough; and the rest of the diseases which people usually have. Dr. Willan says, that he never saw the disease occur more than once; although he had witnessed two thousand cases of it. When I was a pupil, it was denied that small-pox or measles ever occurred twice; but now that there are so many persons capable of making good observation, cases have been sufficiently multiplied to settle that point.

The period at which the disease usually takes place, is three, four, or five days after exposure; but the interval between exposure and the appearance of the affection, is greater in adults than in children. The disease may be caught by being near a person labouring under it; and therefore it is infectious. It may be caught, too, by touching any thing that the individual has touched; and it may be caught from a second person. If an individual visits a person labouring under the disease, and then visits another, the second person visited may catch it from him. It may be communicated too, it is said, by the exfoliated portions of cuticle. One must conceive that these are abundantly impregnated with the perspiration, and therefore that they will communicate the disease; but I do not know myself, from observation, whether this is the case.

In the most simple form of the disease (that called "scarlatina *simplex*") the feverishness is very moderate. On the day after the commencement of the feverishness, innumerable red spots appear on the face and neck; and these, in twenty-four hours, will spread all over the surface;—coalescing and multiplying. They thus increase and multiply; enlarging the redness, and uniting together; till they form large extensive patches over the trunk and extremities. On the third day, there is almost one diffuse and continuous efflorescence over the body; and especially around the fingers. The scarlet hue is usually most vivid on the flexures of the joints;—the skin there being very fine; and likewise on the loins. The patches are seldom universal on the trunk; but upon the extremities they are very continuous;—run to a great length. If you turn aside the bed-clothes, you perhaps observe a continuous redness from the groin down to the foot;—the patient looking almost like a boiled lobster; and towards evening the redness is so intense, that the patient looks as if he had been smeared with raspberry-juice. Some lobsters are redder than others; and the colour at evening is like that of a very red lobster, or a skin smeared with raspberry-juice. On passing your finger carefully over the skin, you may find minute roughnesses;—asperities exceedingly minute;—far more so than you observe in measles; but you do not observe the irregularity that occurs in measles. In measles, you find the whole skin raised in patches; and, besides that, you frequently feel small papulæ; but in scarlet fever you do not find the patches at all elevated. You do not find continuous

elevations; but you may, with the point of the finger, discover exceedingly minute asperities. The distinction between the sensations given to the touch, in the two diseases, is very obvious. In measles (as I have just said) the patches are more or less elevated; and you may feel in the midst of some of them, little papulæ; but in scarlet fever you will not find the patches elevated above the rest of the skin; and, instead of finding little papulæ, you find only the most minute possible asperities;—resembling the "cutis anserina" of the cold stage of ague; and it is only upon the breast and extremities that you can find these, in scarlet fever.

It is usually upon the fourth day, that the eruption is at its height. On the second it comes out; on the third it has spread all over the surface; and if the lower parts were exempt before, it reaches them now; and is at its height of redness. On the fifth day it declines; and it declines by interstices; so that the patches re-appear. While the disease was increasing, the patches were lost in one continuous redness; and then, as the disease declines, the continuous redness becomes again divided into patches;—that is to say, there are intervals of paleness. On the sixth day, the eruption becomes very indistinct; and it is gone, generally, before the end of the seventh. Now and then, if the disease be severe, (and sometimes when it is not), between the fourth and seventh day there are (as is sometimes observed in measles) little miliary vesicles. In acute rheumatism, I have seen the fingers beset with vesicles; and the same occurrence takes place in measles, and sometimes in scarlet fever. About the eighth or ninth day, the cuticle comes off; in the form of scurfy desquamation.

The disease attacks the interior of the mouth and fauces; and it even affects the conjunctiva. The papillæ of the tongue become enlarged; and you may see them through the white crust with which it is loaded. The tongue looks as if it had been slightly sprinkled with Cayenne pepper. There is a dry mucus on the tongue; through which are seen peeping these red points. If there be any cough in the disease, it is not that peculiar cough which I mentioned as occurring in measles. In measles, there is a peculiarly sounding cough; such as sharp women and nurses know very well to be the cough of measles; but that does not occur in scarlet fever. If there be any cough at all, it is merely a short irritating cough; a cough merely from irritation of the fauces, without any expectoration or hoarseness. From the conjunctiva being affected, there is a redness of the eyes; but no intolerance of light, and no overflowing of the tears; and the ciliary glands are not affected.

If scarlatina be at all severe, you may have a discharge from the ears, both within and without;—a discharge both from the Eustachian tube, and the external meatus. It may also give rise to sore ears;—to glandular suppurations in various parts; as in the parotids, and in the glands of the neck. It may give rise to pulmonary disease, or to diarrhœa. It may be followed by chronic pustular diseases of the skin; called rupia and ecthyma; but they are much more common

after small-pox. After mild scarlet fever, there is very often general dropsy;—anasarca. The other symptoms which I mentioned (such as discharge from the ears, suppuration of the glands, &c.) all occur after the most *severe* forms of the disease; particularly that called "scarlatina *maligna*;" but after the *mildest* form you may have dropsy. This dropsy usually occurs at the end of the second week; and after the rash declines. It occurs particularly in spring and in autumn; and, if I be not very much mistaken, it is generally owing to the patient having caught cold, in some way or other. In the plate I now shew you (xxii.) there is a representation of "scarlatina simplex;" in which you observe continuous patches and asperities; or a very minute roughness in the skin.

If the throat be affected in a very marked manner, the disease is called "scarlatina *anginosa*." You now and then have the disease, with little or no affection of the throat. Perhaps there may be a slight affection; though frequently it is so slight, as to deserve no notice; but if it be very obvious, the disease is called "scarlatina anginosa." There is then more violent inflammation of the fauces; which inflammation increases and decreases with the eruption; the general disease of the system, and the eruption, are altogether more intense. The heat may be 106 or even 112 degrees; and there is sickness, headache, restlessness, and delirium. The throat feels sore and straightened; and, on inspection, in various instances, a dark red line is seen along the velum, reaching down to the lower part of the uvula. The patient is hoarse; experiences a difficulty in swallowing; and the tongue is very red, especially at the sides and the extremity. The papillæ are particularly affected; so that they are greatly increased in length. In this more severe form of the disease, the eruption often does not appear till the third day; and very often the eruption is not so universal, but is in scattered patches; and very often it does not come out fully and remain so, but appears and disappears. Thus the whole disease is lengthened. From the eruption not coming out permanently, the disease is protracted. I mentioned that when the measles recede,—when they come out and go back again, the eruption may last for some weeks. So in scarlet fever, if the disease comes and goes, then the period of the eruption is increased; although I do not know that it can be increased to the period, to which I have seen measles extend. When the disease thus goes off, the desquamation is less regular; and, if the rash have been slight, (as it sometimes is, even when the throat is much affected), there is perhaps no desquamation at all. Sometimes we see exfoliations of large portions of the skin, for many weeks; and these are usually upon the hands and feet. The nails have been known to crack and separate; and now and then superficial ulceration will take place on the tonsils. For the most part, there are shreds of viscid secretion; which are sometimes mistaken for sloughs; but they are merely vitiated secretions;—excessively thick portions of lymph. Now and then you have real sloughs; with great debility after the disease.

But we have another form of the affection, in which there is a great disposition to sloughing, to mortification of the throat, and to putrescency of the body; and this is called "scarlatina *maligna*." The distinctions of this disease are very proper; but you have only to remember that there is a mild form of the disease; another in which the throat is much affected; and another where there are typhoid symptoms. With respect to scarlet fever, the names of the species are not unworthy of being remembered; as is the case in many other cutaneous affections. In this violent typhoid form of the disease, the efflorescence is dark and livid. It comes out even still later than in "scarlatina *anginosa*;" where the disease is attended by an inflammatory sore throat; and it is of uncertain duration. It is continually going and returning; and there is less heat of the body. In "scarlatina *anginosa*," I said the heat might be 112 degrees; but here there is less heat; and the pulse, although perhaps very quick, is languid. There is great affection of the head;—great delirium or coma. In fact there is encephalitis;—inflammation within the head; and sometimes there is other inflammation present. The eyes are red; and the cheeks are darkly flushed. There are sordes of the tongue and mouth; dark sloughs (the bases of which are livid) in the throat; and great fœtor from the nose and mouth. There is an acrid discharge through the nostrils;—a discharge which irritates the skin upon which it comes. There is diarrhœa; and frequently there are petechiæ;—black specks on the surface of the body. Hæmorrhage occurs; and death often takes place in two or three weeks. Sometimes the patient sinks suddenly, within the first four days. Occasionally the disease does not shew this malignant character at first; but goes on pretty mildly; and then, all at once, puts on these malignant symptoms. When the body is inspected, there are found to be various internal congestions, inflammations, and effusions; and inflammation of the surface (not of the *interior*) of the skin.

It is this frightful form of the disease which, when recovered from, leaves such severe complaints; as ulceration within the ears, chronic diarrhœa, and such diseases of the skin as rupia and ecthyma. I do not know that this form of the disease is more frequently followed by anasarca than the others. So comparatively rare, however, is this species of the affection, that I have never yet had occasion to treat a patient with it. It is, perhaps, a singular thing, that I never yet lost but two patients with scarlet fever. But it has solely arisen from this circumstance;—that they have always been *mild* cases which I have treated;—such cases as required cold washing, cold air, and occasionally the local application of leeches. I have heard other practitioners say, that they never lost a case of scarlet fever. Luckily the disease does not put on this severe malignant form, except in rare cases.

We sometimes see that form of the disease which is called "scarlatina maligna," occurring generally throughout a neighbourhood;—at least generally during an epidemic. Sometimes we see one person in a neighbourhood affected with it; while other persons, or

other children, are affected with other forms of the disease. Sometimes, even in the same house, you will see all the three forms of the disease. It appears, therefore, that the cause of the disease putting on this malignant character, is sometimes something general in the state of the season or place; and sometimes something altogether dependent upon the condition of the individual. It does not appear to be any thing peculiar in the contagion. We shall find, in the case of small-pox, that matter taken from a person labouring under a mild variety, will sometimes give to another person a malignant, confluent, violent form of the disease. So, in scarlet fever, the *mild* form of the disease, is sometimes caught from a person labouring under a *malignant* form; and *vice versâ*; and although we see numerous cases of malignant scarlatina, during a particular epidemic, and especially in a particular neighbourhood; yet, at other times, we shall see the malignant form occur sporadically. It may occur only in one or two individuals in a neighbourhood; while the rest have the mild, or merely the inflammatory form; and we even sometimes see this peculiarity cease in one place, while another becomes filled with the inflammatory or mild form. I believe that the malignant form is more common in winter, than at any other period. The circumstances that give rise to it are not well known.

There is, however, another form of the disease; in which the *throat* is affected, and not the *surface*. Some, indeed, have denied this; just as some have denied that measles are occasionally seen without catarrh. As, however, this disease affects both the surface and the throat; and as some have asserted that it frequently affects the surface, while there is little or no affection of the throat; so there is no reason whatever why the throat should sometimes not be sore, while the surface is scarcely or not at all affected;—while there is nothing upon the surface worthy of the name of an eruption. Dr. Willan mentions that, in epidemic scarlatina, there are always many cases where the throat only is affected; and that these cases will communicate all forms of the disease, just as if the skin were affected. This, I think, is not at all surprising. In that form in which the throat particularly suffers, if we were to look over the skin from head to foot, two or three successive days, we might perhaps discover an eruption; but it would be so little, that we should be almost justified in saying there was none; and I have seen several in a family affected with the sore throat only; and that mildly. Those who formerly had scarlet fever, and even those that are recovering from it (those who are convalescent,—only just getting strong) if they be exposed to the contagion again, will sometimes have a little soreness of the throat, and even patches on the skin.

The treatment of this disease is, for the most part, very simple. If you take care to do the patient no harm, he in general will do very well. In this disease, cleanliness and fresh air should be particularly attended to. If the season will allow it, the windows and doors should be opened; and only the slightest covering placed upon

the patient. Cold drinks, and water (or something nearly as simple as water) are the most eligible. No food beyond this, except it be milk and water, should be allowed. The bowels, of course, should be kept open. It is said that you alleviate the disease, if an emetic be given early in it. Some are of a different opinion; but many contend that, at the beginning of the disease, it is very good. The disease certainly has been cut short, by taking a patient out of bed, and pouring cold water upon him. The heat of the body is so great, in this disease, that no danger is to be apprehended from cold affusion. It is true, there are cases in which the patient is more or less chilly; but if, in this affection, the general rules which I laid down in the case of common fever be followed, there is no danger whatever, but the greatest advantage, in taking the patient out of bed (however hot he may be) and pouring cold water upon him. Those rules, you remember, are that the temperature is steadily above 98 degrees; that there are no profuse general sweats; and that there is no sense of chilliness; and no inflammation of the chest or abdomen. I presume this would be done oftener than it is, were it not for its appearing a violent measure, to take a person, with fever, out of bed; put him into a washing-tub; and souse him well with cold water. But, at any rate, no friends will object to your washing a patient with cold water. It is a great comfort to the individual; and as long as it is comfortable, it should be had recourse to. Sponging the hands, arms, face, and trunk, with cold water, is grateful to the patient; and is an excellent practice in the disease.

If the inflammatory symptoms run high, of course it will be necessary to bleed in the arm. In general, it is only requisite to give the patient fresh air; to give him little better than water to drink, and nothing to eat; to keep him clean; to let him have but few clothes upon him; and to keep his bowels open. But if the symptoms should be violent;—that is to say, if any local inflammation come on in the head, chest, or abdomen;—it may be necessary to take blood from the arm. You will recollect I mentioned that, in this disease, very violent phrenitis will sometimes come on. You are not to neglect local inflammation, because the affection under which the patient labours is scarlet fever. For the most part this inflammation may be subdued by local bleeding; and it is best to remove it by that means, if you can; because you produce less debility, than if you take blood from the arm with a sudden shock. It is to be remembered, however, that the case may be so severe, as to render general bleeding imperative.

The chief parts that suffer, in this disease, are the throat and head. The throat suffers, because it is one of the seats of the disease. The application of leeches around it, is exceedingly useful;—far better than a blister; as I shall mention when I come to speak of common sore-throat. In that affection, blisters are frequently very severe; but leeches afford immediate relief; and plenty of leeches about the throat, or about the head, are often valuable in scarlet fever. You may see the tongue particularly foul in this dis-

ease; and that might make you imagine that there was great disturbance of the digestive organs; and therefore that emetics, calomel, and things of that description, were particularly necessary. But this, I think, is a wrong inference; for the tongue is one of the seats of the disease. It is not foul because there is intense feverishness of the system; but foul because it is in a state of inflammation. It is, as I have said, one of the parts which the disease affects. You see the papillæ exceedingly red; the tip is red; and the secretion on the back of the tongue is diseased, both in quantity and quality. You may have, in fact, (besides the redness of the papillæ), just such a tongue, with respect to the dorsum, that you have when a person is fully under the influence of mercury;—a tongue covered with a thick, yellow mucus. The tongue itself is swollen.

You will find the state of the mouth much alleviated, by allowing the patient cold drinks; or, if it be agreeable, he may have them iced; for the heat of the throat and mouth is very great. You will continually see sloughs formed upon the throat. I believe I mentioned that it is not every thing which *looks* like a slough, that *is* one; because the disease produces the effusion of shreds of lymph; and they lie there as though it were a little ulcer; but occasionally you have dark and ash-coloured specks, which you find cannot be easily removed; and which are neither more nor less than so many sloughs. In the malignant form you have very considerable sloughs. These, whether they be mere shreds of lymph, or sloughs, are always best treated by gargles of the chloride of soda or lime. The more intense the gangrenous tendency, the stronger must be the gargle. In ordinary cases of scarlatina, a gargle composed of two ounces of the common solution, to half a pint of water, is found strong enough. It will produce a pricking sensation, and is even sometimes too strong; but in other cases, where the sloughs are very considerable, you may employ it much stronger than this. In the merest specks of the throat, you find this one of the best applications that can be employed. However, you frequently find a difficulty in the application of gargles; and then it is better to use a syringe, and squirt the gargle at the throat; if any of it be swallowed, it is a good internal medicine, and will do no harm. I know no gargle to be compared with a diluted solution of chloride of soda or lime; both in cases of scarlet fever, and in cases of thrush.

If the disease shew a very considerable gangrenous tendency in the throat, and the pulse be very soft and feeble, you have only to treat it, generally, as you would treat any case of typhus fever. Among the internal stimulating medicines, which it is found necessary to give in the latter stages, carbonate of ammonia is the best; with the exception, perhaps, of wine; which generally answers better than any thing else. Patients will sometimes take a great quantity of wine, in this disease. Dr. Withering, who wrote on this disease, says that, in an epidemic which prevailed among a number of children, (about twelve years before he wrote), each must have taken a bottle of the best port wine in twenty-four hours, for

several successive days. A quantity of wine is borne, on these occasions, which would intoxicate and destroy at other periods. The treatment is the same as for typhus fever, where there is great debility, or a tendency to putrescency, or mortification.

Some persons think that ammonia has a peculiar power in the disease; and they say they have given it in every case of every description, whether inflammatory or not; and that they never lost a case in their lives. I presume that very few of the cases which these gentlemen treated, were of a malignant character; and that if they had merely given all the children a piece of *sugar* once in the twenty-four hours, still the greater number would have done almost as well. This is a disease which, for the most part, terminates favourably, if the practitioner does no harm; and a little ammonia can do none; but, by rational treatment, you make it run its course mildly; and save the patient a great deal of suffering. If the eruption recede, the best treatment is to put the patient into a hot bath, several times a day; to rub the body with stimulants; and to give stimuli internally. But it is necessary here, as in other similar cases, to observe whether an internal inflammation has come on. It may be *that* which prevents the patches from coming out; and in such a case you must be careful not to give internal stimuli. You would then apply leeches, to remove the internal congestion and inflammation. You may stimulate the surface at the same time; but the great point is to alleviate the *internal* affection, which prevents the *external*.

As this is a disease which children do not *necessarily* take, as they do measles and small-pox, it is but fair to endeavour to prevent them from catching it; and, besides free ventilation and cleanliness in the house, the use of the chlorides may be proper, with a view of destroying the contagion. I do not know whether they *do* destroy contagion; because I have recourse to fresh air, plenty of water, and cleanliness; and as I feel it my duty to use the chlorides at the same time, it is impossible to say what is done by the one, and what by the other. I have no means, therefore, of drawing a conclusion. But it would be well to throw the dirty linen, taken off a patient, into water in which the chlorides have been introduced; to put the chlorides into various utensils which are used; and to sprinkle them about the room. In this way, you may possibly prevent other persons in the house from catching the disease.

There is, however, a medicine recommended by a German physician, for the purpose of preventing the disease, which appears to me, of a very fanciful character. Dr. Hahnemann, of Leipsic, says that belladonna will prevent the disease. He says, that if you take two grains of the extract of belladonna, and dissolve them in one ounce of cinnamon-water, or pure water, (which is much the same thing), and give two minims of this solution to a child a year old, (or another minim or two, according to the age of the child), you may prevent the disease. I never thought it worth while to try it; because I hardly think the observations which are published conclusive. I know that foreign physicians have since published accounts of the

disease being so prevented; but it ought to be from hundreds of observations, that any one says the disease has been prevented; because it is an affection that will not attack every one in a house; and every now and then, when the disease has been spreading for some weeks, all at once it will disappear, and no other persons have it. Inferences, therefore, ought not to be drawn without very numerous facts;—numerous coincidences, well ascertained.

With regard to the anasarca which follows this disease, I have no doubt that it frequently arises from cold; for it either begins in the face, or the face is affected as soon as any other part. It may be attributable to exposure to cold when the disease is over, or declining; because it is an affection that does not take place *during* the disease, but *subsequently* to it. Rayer condemns the application of cold in the disease; because it is likely to produce anasarca. Now I have generally used cold ablution, not *affusion*, in this disease; and I never had a case of anasarca, which occurred when I had treated the disease myself. I do not believe that, if low temperature be applied properly (that is to say, when the heat of the body is too great) there is any danger of the patient catching cold; but if it be used when the patient is not hotter than he should be, or after the disease has declined, then I have no doubt that it would lead to anasarca. However, this anasarca appears to be inflammatory; and for this reason it resembles the anasarca which is the effect of exposure to cold;—especially cold united with wet. It begins in the face; or it particularly affects the face; or it is seen in the face as soon as any where; and, in the next place, the urine is often albuminous. It will not merely contain *albumen*, however, but sometimes *blood*. In most cases of anasarca which I have seen, (and perhaps I have seen them only because they were intense), there has been more or less internal inflammation, in the head, chest, or abdomen;—just as in acute anasarca from cold. In almost every case, it was in the chest; generally peripneumonia or pleuritis.

The treatment of this anasarca is best conducted by antiphlogistic means;—by purging the patient well (which is an antiphlogistic remedy); and some say by giving digitalis; but I know that it recedes best by purging; and by attending to any internal inflammation that may exist. It would be in vain to purge, in severe inflammation of the chest, unless you made use of leeches at the same time; and the same remark applies to the head. It is important, in all these cases of anasarca supervening on scarlatina, to examine whether there be inflammation; for if you neglect that, the anasarca will generally be tiresome; but if you treat that, it will go away. Occasionally the anasarca goes away of itself; but you may always expedite it by purging, or by briskly applying antiphlogistic measures, directed towards some internal part. I do not know whether it is mentioned by any author; but, besides phrenitis or arachnitis, rheumatism is not an uncommon sequela of scarlatina.

ERYSIPELAS.

The next disease of which I shall speak, is one that I hardly know where to place;—I mean *erysipelas.* This word is said to be derived from ερυω *to draw*, and πελας *near* or *adjoining*; from its tendency to affect the neighbouring parts. Rayer places it with the rashes, because there is a continuous redness of the skin; but Willan places it among those which have a large collection of water;—bullæ. The truth is, this disease may exist without the formation of any secretion,—without any collection of water, or even watery vesicles; yet I think that, in a great number of cases, it does produce an elevation of the cuticle (of smaller or larger size) containing water. Upon the whole, it may be right to place it with the rashes; as the redness is diffused, and always exists, whereas vesicles or bullæ do not; but it is a matter of no very great importance.

Erysipelas is a very intense affection; of the same description as roseola and erythema. What roseola and erythema are mildly, erysipelas is severely. If you have a case of a diffused redness of the skin, with heat and more or less smarting, without disturbance of the constitution, and without any swelling of any consequence, you may call it *erythema*; or if the symptoms be equally mild, and the rash is rose-coloured, you may call it *roseola*; but if the part be much swollen, the inflammation very intense, the pain and heat very great, and the constitution be disturbed;—then you call it *erysipelas.* It differs from erythema in this:—that while the inflammation of erythema may be *chronic*, as in "erythema nodosum," or "erythema tuberculatum," erysipelas is always an *acute* febrile disease; attended with heat, swelling, pain (which erythema and roseola may not be), redness of some part of the skin in patches; and often united with vesication. The swelling is irregularly circumscribed; and is generally soft. Generally the redness disappears on pressure, and instantly returns when the pressure is removed; as in erythema and roseola.

Very often, before this inflammation comes out, there is a previous excitement of the constitution; as is the case in measles and scarlet fever. Before tenderness of the skin is felt, the patient may be feverish; or he may have headache, nausea, vomiting, drowsiness, vertigo, or tenderness of the epigastrium; or he may have rigors. After these symptoms, more or fewer of them, have existed for some time, in greater or less intensity, about the second or third day, some part of the skin will feel sore; and, on being looked at, it will be found a little swelled, and a little red and hot. All this increases. The skin becomes more swelled; very red and very hot; the patient experiences pricking or smarting pains; and the general excitement and feverishness are increased. Occasionally the local symptoms appear first;—the feverishness taking place exactly in the same degree that they do; but sometimes you have the feverishness first, and then the redness appears. Very frequently, after a little time,

minute vesicles are seen here and there, in the inflamed part. Frequently you have no vesicles at all; and when you have vesicles, they frequently occur only in some particular parts of the red patches. Sometimes they are not very large;—they are really vesicles; but sometimes they are as large as walnuts; and are then called *bullæ* in Latin, and *blebs* in English. These contain, at first, a clear fluid; but sometimes, after a day or so, it becomes turbid; and is more or less yellow. These burst, and the fluid oozes out; so that a yellow crust forms;—a crust which is made of this secretion dried, and the exfoliated cuticle. If the disease decline without forming any of these vesicles, or bullæ, the cuticle is sure to come off, and you have a scurf; but if there be vesicles, or bullæ, then you have crusts. Sometimes the surface under the elevated cuticle, after the bursting of the bladder, secretes pus;—more or less suppuration will take place; and sometimes the secretion, be it pus or mere lymph, is very acrimonious; so that it produces great irritation of those parts over which it flows.

This is a disease which has a great tendency to spread. It will sometimes spread over half the body. I have seen it spread from the occiput down to the toes. As it spreads, sometimes the part first affected recovers; at other times it does not; so that you have one immense sheet of red colour. It is sometimes very curious to see, as it spreads along, how the parts first affected become well. Now and then it will suddenly cease, and some internal part suffer. This change of situation is called *metastasis;* and if it only disappears in *one* part of the surface, to *reappear* in another, the French call the circumstance *delitescence;* but if an *internal* part be affected, it deserves the name of *metastasis.* When it extends slowly from one part to another, (whether the part affected recovers or not), it is called "erysepelas *crraticum;*"—wandering about. In another form, you will sometimes observe very great swelling, and a great effusion of serum into the cellular membrane; and it is then called "erysepelas *œdematodes;*"—being œdematous. Now and then, the irritation of the cellular membrane under the skin, is much more severe than to secrete mere serum. It is so severe as to secrete pus; and then it is called "erysepelas *phlegmonodes;*" it being the character of phlegmon to secrete pus. When this occurs,—when the cellular membrane underneath the skin becomes affected, as well as the skin itself, to a great degree,—there is extreme pain, extreme tension, extreme hardness. The limb feels as though it would burst; the patient is skin-bound; and the general symptoms, throughout the body, are excessively severe. Suppuration sometimes occurs only here and there; but sometimes it is very extensive. It is by no means uncommon, in partial phlegmonous erysipelas of the face, to see the affection suppurate in particular spots; as, for instance, at the orbit. The cellular membrane under the eyelids, is disposed to run into suppuration, when there is no suppuration in any other part of the face. But, besides this local "erysepelas *phlegmonodes,*" you will sometimes see a whole extremity fall into this particular state.

Erysipelas is a disease which is by no means confined to the surface of the body. You will continually see the throat affected. If the inner part of the throat and mouth are the seat of disease, you will see the throat red; the tongue red; the mouth complained of by the patient as exceedingly hot; perhaps a short cough, and a difficulty of swallowing. In fact, there is a sore throat. Very frequently, too, it will run down the membrane lining the tubes; so that you have a very great cough, and a difficulty of breathing. You have more or less bronchitis; and sometimes there is really *severe* bronchitis; but, for the most part, it is only a *superficial* sort of inflammation;—erysipelas of the mucous membrane; and will go away without the adoption of any strong measures. Very frequently, besides the sympathetic effect occurring at the beginning of the disease, you find great tenderness of the epigastrium;—the patient complaining of intense heat there; and sometimes the same is felt all over the abdomen, as if the inner surface of the intestines were in a state of erysipelas; and then you have diarrhœa. I have seen the disease spread down the air passages, and then down the alimentary canal. But, besides this spreading from the skin through the ramifications of the trachea and bronchia, and through the pharynx and æsophagus to the stomach, and down to the intestines, you continually see the membranes of the brain affected, when the head and scalp are the seat of the disease. When the disease affects the inside of the head, (which it is much disposed to do, after it has attacked the face, neck, and scalp), the danger arises from inflammation of the membranes of the brain; so that, as the disease advances, you have extreme drowsiness. The patient complains of internal pain of the head; delirium comes on; and, at last, there is more or less of an apoplectic state. When the face is affected, the eyes are closed and the features lost, from the general swelling and effusion into the cellular membrane; so that you could not recognize the individual at all. The person becomes, in his appearance, as ill-looking a blackguard as can be conceived. His nose is bottled, and is buried in his cheeks; in fact, he looks as if he had been drinking hard, and had had a good drubbing. The features are set; the eyes closed; and there he lies, not to be recognized by any one. I know this by my own case; having myself laboured under the disease. My friends brought a looking-glass; and, on raising the upper eyelid, I took a peep at myself; but the sight was so abominable, that I begged the glass might be removed.

When the patient dies with sypmtoms of inflammation within the head, (such as drowsiness, delirium, &c.), I have always found, within the skull, certainly not inflammation, but the *effects* of inflammation;—effusion. I have always seen an effusion of serum upon the brain, or in the ventricles, or in both situations; and sometimes great turgescence of the vessels. The disease is very much disposed, in many cases, to produce mortification. Parts of the skin will often slough; the vesicles will become dark; and the fluid which is within them become bloody. But, besides that, the disease will frequently produce sloughing deeper in, and death will

take place, to all appearance, from the gangrene. When this is the case, it is called "erysipelas *gangræenosum*." Infants are very liable to this gangrenous erysipelas. New-born infants will frequently have it about the umbilicus and the genitals. I have seen this occur without any vesication. Round the umbilicus or the pudendum, in young children and infants, the parts will become very red, hot, and hard; the red will become dingy; and then gangrene take place, and the parts become perfectly black. In adults, this occurs, very frequently, in the extremities; but in the case of children, it is about the genitals and the umbilicus, that it usually takes place.

You see, therefore, that this is a disease like continued fever, or any common inflammation; or like scarlatina,—the last disease which I mentioned. I mean, it runs from mere active inflammation with strength, on the one hand, down to the most perfect prostration of strength, and the most violent tendency to mortification, on the other. It is pretty evident, therefore, that no one mode of treatment can be adopted; before I speak on that subject, however, it will be right to mention what are the causes.

The common causes of the disease, are vicissitudes of temperature, and exposure to cold;—especially when the person is heated. But it very commonly arises from some *local* cause;—mechanical injury, or any thing that irritates. It is much predisposed to by certain situations. There are certain situations, in which erysipelas is very common. There are hospitals, it is said, where erysipelas is more common than in others. It certainly appears to be dependent, in some measure, upon the season. At particular periods, in several hospitals in the same town, where there had been no erysipelas, all at once the affection will become very common. Besides the common exciting causes, such as refrigeration or local injury, it depends, in a great measure, upon local circumstances; and also on something in the air at the time. These circumstances may be so strong that, without any local irritation, patients will be seized with erysipelas; and the slightest local injury will sometimes cause it. Erysipelas, in these particular seasons, or in these neighbourhoods, may be followed by the most violent inflammation. Persons of bad constitution are also very liable to it. Those who have been in the habit of drinking spirits, or have ruined their constitution in any other way, are very likely, from the least injury, (even from leech bites), to fall into this disease.

It is said, by some, that erysipelas is occasionally contagious. Dr. Wells, (as I believe I mentioned formerly), published a number of cases to prove it contagious. It does appear that, in the cases he mentioned, it was contagious. The instances were numerous; and they were cases of persons who went to visit others who had erysipelas; and then went back, and gave it to others in their own houses. I cannot exactly say that I have seen it contagious. In hospitals, I have seen, (as I suppose every body has), patient after patient, in a ward, become affected; but whether it arose from local circumstances, or from emanations spreading from one individual to

another, I cannot tell. I recollect once having had it, five days after stooping down over a patient, who had the disease in so violent a form that he died of it. I was looking into the state of his skin; and his breath came into my face. I turned away with a feeling of disgust; and said,—"I hope I have not caught it;" but five days afterwards, having forgotten the circumstance, I was seized with it. I felt chilly, and my head was sore; and I had the disease violently. This was in the winter, when one is liable to catch cold; and therefore I am not sure that I caught the disease from contagion; though I never take cold, that I know of. I have seen instances where the affection might have been contagious; but I am not sure that such was the case. You will find Dr. Wells's cases in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge." *

The treatment of the disease must be totally different in different cases. In the country, and in young, strong, healthy subjects even in town, there can be no doubt of the propriety of taking away blood from the arm. I have often bled patients, and was repeatedly bled myself; and with the best effects. On the other hand, if a patient have a shattered constitution, either in consequence of being half-starved, or of intemperance, or any thing else, then you must employ bleeding with great caution. But still, in the greater number of cases, antiphlogistics are the proper remedies; though perhaps they should not be carried to a great extent. Purging, and the other parts of the antiphlogistic plan, are necessary. I have always found cold useful; and I never saw the disease recede in consequence of it, or internal disease produced by it. I employed it in my own case. The application of cold water, either directly, or by means of rags, is very uncomfortable to the patient, after a time; and as soon as this effect is produced, it is but common sense to leave off the application of cold. If fresh air can be obtained, it should be had recourse to in this, as in most other diseases. You will frequently find *local* bleeding answer every purpose; but I should never shrink from *general* bleeding, if it appeared desirable. There is nothing to fear from it. With regard to local bleeding, you may employ it by means of leeches *around* the part; or you may put them *on* the part itself. There is no harm in adopting the latter plan. I was not aware of this at one period; but I have tried it; and now I know it by experience. Some think it is more eligible to take away the blood by means of needles, or the point of the lancet; because then there is not that irritation, which is occasioned by the bite of a leech. I have never seen harm result from leech-bites, when they were applied to the inflamed part, or to the part itself; but it is said there *never* is any danger, if you withdraw the blood by means of acupuncture. There is a vast collection of blood in the erysipelatous part; and if you puncture, you may frequently unload it to a great amount. You will find that you may put a stop to the progress of

* See Volume ii; Page 213.

the disease, by the application of the nitrate of silver. I have done it times without end. If you rub the nitrate of silver on the healthy part around the disease, or if you make a strong solution and paint all around with a brush, you will generally prevent its farther progress. Some persons recommend blisters; but the nitrate of silver answers perfectly well, and much better. I have stopped the disease, over and over again, by this means; and I should feel it right to have recourse to it, in every severe case. We are indebted for a knowledge of its use to Mr. Higginbotham, of Nottingham. He has written a work to shew the good effects of this remedy; not only *around* the part, in this way; but applied to the inflamed part itself. In the Lectures on Surgery, you will have fuller information on this subject, than it is my business to give; but I know that you may stop the erysipelas in the way I mentioned. It is necessary, however, that the application should be continuous; for if you allow a small place at which the disease can creep out, depend upon it it will. I have seen cases where a portion was left unguarded; and I have seen the affection creep through there, and spread along the part. It is very important to stop the progress of the disease, if it be near the head; because if it should spread over the head, or even half over it, it is ten chances to one that you have delirium, and inflammation of the membranes of the brain; and the patient will die in an apoplectic state.

If there be much tension in the part, there is no impropriety in doing more than emptying it by leeches. Indeed, it is very important to make an incision in it, by means of a lancet; and the tension will then sometimes cease immediately. It is in "erysipelas *phlegmonodes*" that this is particularly required. Generally, if you take away blood, purge, starve, and apply cold, the disease will give way; but if there be this extreme tension, and you make an incision, the part immediately stretches; just as it would if you had made a cut in a shoulder of mutton. The practice is now, I suppose, well established. Some surgeons make the incision a foot long; but others make half a dozen incisions, each an inch in length;—some doing it all at once; and others, as Mr. Lawrence once waggishly said, "by instalments." That, however, is a matter of surgical choice. But there can be no question, I think, as to the use of making incisions, for the purpose of letting out blood or pus; or (before pus is formed) merely to take off the tension, by allowing the blood to ooze from the part. In case mortification is threatened or occurs, you have to consider whether it depends upon the violence of the inflammation. If the inflammation be violent, you must not, because there is mortification, give wine, bark, and opium; but must strive to subdue the inflammation by antiphlogistic means. Again, if you see or fear a sinking of the constitution, even if there be no mortification, then wine, porter, opium, bark, and good food must be given;—just as would be the practice in any common case of inflammation. In doubtful cases, when you hesitate whether to bleed and put the antiphlogistic plan into force, or to stimulate and support,

the best plan is to apply cold effectually; to unload the part by leeches or punctures; and to give beef-tea, milk, and quinine. I have never seen quinine do harm, even in active tonic erysipelas; and, in doubtful cases, I believe it always a safe and eligible medicine.

Some old practitioners imagine (from having learned it in their youth) that bark is a specific for this disease; and in every case of erysipelas they give, or (as they call it) "throw in" the bark. It was at St. Thomas's Hospital that this practice was first established. Dr. Fordyce gave bark in erysipelas, with very great success; and his colleagues and successors, down to within a very few years, all adopted the same practice, and extolled it highly. Now I never fell into the practice of giving bark universally, without regard to the state of the patient. Very often there is tenderness of the epigastrium; very often there is vomiting; very often there is a robust constitution and a strong pulse;—in short, a decidedly inflammatory state; and I could not, in my conscience, think of treating the case with bark. No doubt bark might be given, in many inflammatory diseases, without doing any harm, except so far as it prevented you from doing good; but you see many cases where antiphlogistic measures are decidedly required; and I could not bring myself to omit them. There are many gentlemen now in practice, who were educated under Dr. Fordyce; who was the principal medical lecturer in London at that time; and they regularly give bark in this disease. I have no doubt that a number of their patients get well; because many cases are assisted by the bark; and many cases will get well of themselves, if you do not adopt any measures which do serious harm. There is certainly a great peculiarity in erysipelas. You will frequently see cases do well, with little or no treatment;—without those evacuations that other inflammatory diseases require. I have seen cases neglected, which, had they been pleuritis or enteritis, would have proved fatal without vigorous antiphlogistic treatment; but which, notwithstanding they were neglected, did exceedingly well.

Erysipelas is considered a specific inflammation;—not contagious, like small-pox; not limited in its occurrence to once during life; but still altogether of a peculiar nature. It will bear stimulants, and bark, and nourishment, in a way that other inflammations will not; nor will these things do the same degree of harm, that would ensue from their exhibition in other inflammatory complaints. You may omit antiphlogistic measures, to an extent that you dare not in other cases; and it will require on the whole (however violent the inflammation) much more moderate evacuations, and will bear great evacuations less than other inflammations. There is another important consideration. When you are in doubt as to whether you should support the patient or not;—whether you should not give him moderate portions of wine, bark, quinine, and porter;—you may then do it with the greatest safety. I never saw harm done, when it was near the balance. In other cases of inflammation, I

have thought that the time was arrived for this species of treatment, when it was not; and have been obliged to desist; but in erysipelas, such a circumstance very seldom occurs. As to sulphate of quinine, it may be given in most cases of the disease; and I never saw injury arise from it in any circumstances. I have seen decidedly active cases of this disease treated with quinine, without their being the worse for it. I do not know that they were improved; but certainly they were not rendered worse. Dr. Heberden gave it, as his opinion, that bark would not do harm in inflammation; and in a great many cases it is true; but as to quinine, I have given it over and over again in inflammation, for some other reason (for example, in ague), and have not seen the inflammation increased by it; but in these cases I have always treated the inflammation, at the same time, by proper measures. Hence, in erysipelas, if you feel disposed to give quinine, you always may; unless there should be vomiting; and even then I have given it; and it has put a stop to the vomiting. Therefore, though this is a disease that is to be treated by decided antiphlogistic measures, yet it permits the exhibition of wine, bark, and porter; and though you adopt antiphlogistic measures, yet it does not bear those vacuations, which other inflammatory diseases do. It sooner requires supporting measures, and a larger number of cases require support, than perhaps in any other inflammation. Respecting local applications, I have found cold answer better than heat. Some practitioners sprinkle starch and other powders over the skin; and I do not know that it does any harm; provided the powder be of the lightest possible description, so as not to lie heavy on the part. If there be vesication, it certainly is a good plan to sprinkle a little powder, for the purpose of absorbing any discharge that may have oozed out.* The oxide of zinc, or calamine-powder, either the one or the other, is as good an application as you can employ; but this should not prevent you from applying cold water, which you may still do by means of cloths.

SQUAMÆ.

I now proceed to consider those inflammations which, although they are attended by no secretion under the skin, still cause such a disease of the cuticle, that a scale is produced. In those inflammations which I have already spoken of,—lichen, strophulus, measles, and so forth,—there is for the most part a degree of scurfy exfoliation after them. The cuticle is separated, more or less; either in fine grains, so as to form a scurf, or in large portions. But the diseases we are about to consider, produce something more than a separation of the cuticle. The latter becomes little diseased; and lies in plates upon the inflamed spot. That is the only difference. These thickened portions of cuticle are called *scales*. The definition of Dr. Willan is,—"a lamina of morbid cuticle; hard, thickened,

* The late Dr. Fletcher, of Edinburgh, used to relate that, in an attack of erysipelas under which he suffered, he derived the greatest comfort from the application of blotting-paper, to absorb the discharge.

whittish, and opaque." A *scurf* is only a little exfoliation of cuticle; —the cutis not becoming diseased; but if the cuticle be not merely separated, but become hard, thickened, whitish, and opaque, then it is called a scale. Still, however, there is no ulceration. There is neither pus, nor serum, nor any thing else effused under the cuticle; but the cuticle is separated; and not only separated, as in common inflammation, but thickened and diseased. In this order of diseases, there are three genera; and they are of common occurrence. They are diseases that you will have to treat every day. None of them are contagious. They may occur twenty times during life; and they are all disposed to become chronic.

PITYRIASIS.

I speak of pityriasis first, because the scales are exceedingly thin, and the affection altogether very superficial. When it occurs in the head of children, it is called "pityriasis *capitis*;"—dandriff of the head. When a child's head has this disease, a fine powder falls off in all directions; in fact, it is called *pityriasis* from its resemblance to *bran* (πιτυρον). It is a very common disease of children. Now and then the inflammation under these scales is considerable; and then it is called "pityriasis *rubra*." It is only worth while for you to remember that, according to the degree of inflammation of the skin underneath the scale, the part is either rather pale or pretty red.

This is a disease which lasts only for a time in children. For the most part, it gets well; and I dare say sometimes spontaneously. It is best treated as inflammation;—having the parts pretty well moistened, twice a day; keeping them exceedingly clean; and cutting the child off from stimulants. Small doses of Hydrargyrum cum Creta, I believe, are the best internal means that can be used; the best, at least, that I have found. It is said, by Bateman, to be removed by antimonials, with the decoction of woods; but I have no faith in these; and I know, that the plan I have stated, answers better than any thing else. You may keep the parts soft by Unguentum Zinci, which is one of the best ointments; but it is well that you should know that, in diseases of the skin, ointment (however mild) may produce irritation. I have seen many diseases of the skin kept up by medicinal applications. It is well to remember this; because you might imagine, that it was only something *stimulating* in the ointment that was injurious; and that a *milder* ointment would answer better; whereas it is the ointment *itself* which produces the mischief. I have seen the disease kept up entirely by patients putting on grease; and when they have exchanged it for calamine-powder, and kept the parts moist by rags laid on them, they have improved almost immediately.

Pityriasis is said to occur frequently in another form; called "pityriasis *versicolor*." I am not sure that it is really the same disease. You will see it in young women, particularly about the breast; and sometimes there are yellow patches of it on the neck. This state is called by Willan "pityriasis versicolor;"—variegated

pityriasis; but Rayer does not place the disease under "pityriasis." Now and then there is a little redness, a little heat, and a little scurf. I do not believe that this variegated pityriasis is under the influence of internal medicine. At least, I have tried a great many prescriptions without any effect. You may destroy it by the local application of acids. This remedy is painful; but you may have a part of it painted first; and if that be cured, and the patient has no objection, you may go over all the rest. It is a complaint not attended by derangement of the constitution; any more than the scurf of children. I do not know why these affections occur; the causes as far as I am aware, are not known. It may, now and then, arise in children from weakness; and it may be right to give tonics;—some preparation of iron or quinine; and good nourishment; but, for the most part, I believe the treatment I have mentioned (Hydrargyrum cum Creta, and mild diet) answers very well.

The two other diseases in this class you will see every day. They are diseases to which a great number of young men and women are particularly subject; and I think they are more common in the latter, than in the former. These two affections are very similar to each other; they run into each other; and, indeed, I think they might be considered as the same disease in different forms.

LEPRA.

The first of these is called *lepra* (λεπρος, *scabby*). Lepra does not signify *leprosy*; according to the ancient term. It is a different affection. It is by no means a loathsome disease; consisting merely of red spots or patches on the skin, covered with scales. For the most part it does not affect the health, except so far as it may sometimes be connected with an inflammatory state; otherwise it is merely disfiguring and inconvenient.

In the disease denominated *lepra*, to distinguish it from *psoriasis*, you will find that the patches are circular, and that the margin is red, and elevated a little above the skin. The cuticle is sometimes very much thickened; and sometimes very white and silvery. You will first see the disease in dots; varying in size from that of a pin's head, to that of a pea; and these dots become confluent, and form patches. It is about the outer part of the elbow, and below the knee, that these are most conspicuous. You will see it too about the occiput, behind the ears; and it will affect the face more or less, and the whole of the scalp. Of course the character of the disease is shewn more in one part, than in another; and it is a good general rule, when you investigate cutaneous diseases, not to be satisfied with looking at one part of the body; for the disease may be but *ill* characterized at one part, and extremely *well* characterized at another. It is best, in looking at cutaneous diseases, to examine all over the body; and in doing so, you will come to one part where the disease is so characteristic, that you may name it without any difficulty. The patches, in lepra, are sometimes as large as a crown-piece; and the disease much more frequently

affects the extremities than the trunk; but you see it also very much about the head.

The most common form of the disease, is that which is called "lepra *vulgaris*." You will observe, by looking at a plate, that the eruption affects a circular form; that the large patches, which are made up of an aggregation of small ones, are still more or less circular; and you will observe also around them a red margin, which is elevated. When they heal, they generally do so from the centre. When there is a hospital attached to a medical school, I could bring patients before you, in order to illustrate these various cutaneous diseases. This is the most common form; but I mentioned, that now and then, the scales are very silvery. They are really as silvery as the scales of a fish; and then the disease is called "lepra *alphoides*" (αλφος, *white*). Now and then the scales are a little dark; and then it is termed "lepra *nigricans*." You may remember that sometimes it is very white; and sometimes black. That will do as well as remembering *vulgaris*, *alphoides*, and *nigricans*. It is a great mercy that we have no other names given for the intermediate shades.

This is a disease which I do not think I ever saw in an infant, or in a child. You seldom see the disease in patients under ten or eleven years of age; and even then it is not so frequent as in the first stage of adult life. From about seventeen or eighteen, up to thirty, you see the disease more commonly than at any other period. Why this is I cannot tell; and as to the cause, it is very common to discover none; but now and then one is able to trace it to a person having drank cold water, or some other cold fluid, when overheated. This is a common cause of lepra, and a variety of diseases of the skin which are not contagious. It is a disease which will last a very considerable time;—perhaps two or three years; though sometimes it will go off in a few months. It is an affection which will recur; and now and then there is very great tingling, and very great heat of the skin. I always make it a rule to inquire in this, as in other chronic diseases of the skin, whether there are not some internal symptoms; and, in a large majority of cases, you will hear the patient complain of drowsiness, heat and pain of the head, and giddiness; and if you take away blood, you find it buffed, and perhaps cupped. This is an every-day occurrence; but it is by no means dwelt upon by Willan and Bateman as it should be. In fact, they were only forerunners to better writers on the subject. They were occupied, as historians, in pointing out diseases; rather than pointing out the pathology, or the rational mode of treatment. But if you will make inquiry in cases of lepra, as well as of other diseases of the skin, you will find the head affected at first, and frequently throughout the course of the disease. There are cases where nothing can be discovered about the head; but even there you find the irritation and tingling very much relieved by bleeding.

PSORIASIS.

The other squamous disease is called *psoriasis* (*ψωρα, a scab*). It bears a great affinity to lepra; and even runs into it. The difference between the two is that, in psoriasis, the patches or spots are not circular, but more or less oblong; the margin is not raised; and it more frequently heals from the margin, than at the centre. In this disease the skin is very apt to crack; you see fissures in the skin, called *rhagades*; and there is, for the most part, much more inflammation than in lepra. You may, in a great number of cases, easily distinguish between these affections. In lepra the patches are circular, the margin is elevated, and there are no cracks; whereas, in decided psoriasis, the spots are oblong, the margin is not elevated, and there are fissures or cracks. But in intermediate cases, you might almost defy any one to state, positively, whether it is lepra or psoriasis. They certainly run into each other. There is, very frequently, great irritation in this form of the disease. It tingles and smarts severely.

You will observe the different species from the plates. In one you observe a form, where there is little inflammation; and which occurs in dots. It is called "psoriasis *guttata*." If it occur in patches, it is called "psoriasis *diffusa*." If any cause of irritation be applied to the skin, this may be aggravated. In washerwomen, for instance, the soap may produce this effect. Now and then it takes place, very locally, in the palms of the hands, or the soles of the feet; but chiefly in the palms of the hands; and it is then called "psoriasis *palmaria*." There are generally cracks in this variety. The patches, you perceive, are oblong; and the margins not raised. There are rhagades and fissures; which are so common that you rarely see the disease without them. This affection will sometimes last for a great length of time, and cover the whole body. The cuticle is separated in great quantities; and beneath it there is more or less fluid oozing forth. The more severe the inflammation, the greater is the disposition to crack. Now and then this disease appears in a form like that of worms; and then it is called "psoriasis *gyrata*" (*γυρος, curved*). The woman represented in the plate here, is ornamented very beautifully. She looks as if her mother had longed for snakes. I never saw this form of the complaint.

You have only, then, to discover whether the disease is attended by scales; and if it be, it is one of the three species to which I have now adverted. If it be *pityriasis*, you find the scales very minute, coming as near to scurf as possible. If the scales be thick, the patches *circular*, the margin elevated, and there be *no* cracks, you may depend upon it it is *lepra*. If, however, the patches assume an *oblong* form, and there *be* cracks, it is psoriasis.

I stated that these diseases are not contagious; and that is allowed to be the case; but, two or three times, I have met with the disease contracted, apparently, from communication with another person labouring under it. It has happened to me (I am

quite sure *twice*, if not *three times*) to see persons have lepra come on after sleeping with others affected with the complaint, or using their towel. These instances occurred in St. Thomas's Hospital;—one about three years ago; and two, I think, within the last twelve-months. It might have been chance; it is impossible for me to say it was not; but it so happened that another person had lepra, about a week or a fortnight after employing a towel which had been used by a person with the affection; and in another case, a young woman slept with another who laboured under it; and she had patches as large as a half-crown. I cannot venture, therefore, to say that the disease is not contagious.

You will see one form of the disease which you might consider a pustular affection; namely, "psoriasis *inveterata*." Psoriasis sometimes lasts a great length of time;—in fact, till the whole body is covered with scales; so that scarcely an inch is free from it. The disease being very severe, those cracks which are peculiar to it, or characteristic of it, become very large; and produce a degree of oozing. The irritation of the skin is sometimes so great, that it not merely produces a diseased cuticle, but perhaps an oozing of fluid under the cuticle; so that psoriasis runs into lepra, on the one hand, and into those diseases which are characterized by a morbid secretion, on the other. Still the cracks and the occurrence of a scaly cuticle shew that is a scaly disease. But you must look at these things as pathologists, and not as natural historians.

In the treatment of this disease, it is improper to begin with any empirical medicine, till you have ascertained whether there is a sufficiently inflammatory state of the skin, to justify your adopting antiphlogistic measures. Many cases will be cured by putting persons on low diet, and bleeding them from time to time. I do not know that, either in lepra or psoriasis, mercury is of use. Lepra, however, is often a venereal affection, and so likewise is lichen; and in such cases you will fail in doing good, unless you exhibit mercury. But when the disease is of a syphilitic character, the redness is of a coppery hue, and the spots are hard, in consequence of the disease approaching to a tubercular state. When you see these appearances, no matter what the patient says, (even though he should aver that he has never been with a woman in his life), you had better give mercury; for, on this subject, patients will tell all sorts of untruths, without the least hesitation. The hardness of the parts, and the copper-hue, are sufficient to make you suspect that the lichen, lepra, or psoriasis is of a syphilitic nature. But when you have ascertained that there is no decidedly inflammatory state, sufficient to make you bleed the patient, or if you have already used antiphlogistic measures to reduce the inflammatory state, then other remedies may be employed; but of the mode of their operation I am ignorant.

There are some of these remedies which, doubtless, deserve all the character that has been given them; and one of these is dulcamara. I have seen so many cases give way, under the persevering use of this medicine, that I have no doubt it is a remedy for the disease.

A pint of the decoction may be given in the course of twenty-four hours. You may begin with two ounces, three times a day; and then gradually increase the dose. Arsenic, also, has very great power over the affection. I have seen many cases yield decidedly, when a person took arsenic. I think that these two are, by far, the most useful remedies in the disease. Some mention pitch as being serviceable; but I do not know that it has any particular power over the affection. If it has, I have not observed it; though I have made a patient swallow an ounce or two in a day. It is, however, perfectly harmless. The warm bath is very useful; but if there be much irritation of the skin, the heat is unpleasant; and then I have not persevered with it. If the warm bath be used, it should be in a decided manner. The vapour bath is likely, on the whole, to be more beneficial than the warm bath; but if either of them be used, it should be every day, or twice a day. There is nothing weakening in it, if patients do not keep themselves warm afterwards. The warm bath is seldom used to the extent that is required. With respect to local applications, many persons wash the surface with a decoction of dulcamara; but you often find that the tar-ointment is very useful. If, however, there be much irritation, it is not proper; and zinc-ointment is better. Tar-ointment is certainly one of the best applications that I am acquainted with, in this disease;—provided it is not of a syphilitic character; and that you have employed antiphlogistic measures, as long as the blood was buffy and cupped, or the patient's pulse justified it. Dulcamara, or arsenic, should be united with it, as an internal medicine.

With regard to psoriasis, you will find antiphlogistic measures, particularly bleeding, of the greatest use. Many cases will be cured by moderate bleeding and low diet. I do not know that dulcamara is of the same use in this form of the disease, as in lepra; but I have seen many cases cured by sulphuric acid, and by various other acids, perseveringly given. It is singular how large a quantity of the acids you may give. One would imagine that, being chemical substances, you could not increase the quantity to a great amount. It is a common remark how you may increase the dose of narcotics; but we know that the susceptibility of the body to any sedative agent, becomes less and less, the more frequently it is employed; yet we should not suppose that it would resist chemical agents. We may however increase the dose of sulphuric acid, properly diluted, to a great extent; and I have frequently done so in psoriasis with the best effect. But what I am anxious to impress upon you is, the importance of antiphlogistic treatment, in all cases of this description, where it is needed; and to insist on the necessity of looking out for inflammation.

When the skin cracks, you sometimes find greasy applications of great use, in softening the affected part; but, in a large number of cases, they cannot be borne. You will find it of great use, in the treatment of psoriasis, to prevent the patient from taking stimulants; for you will often find the disease kept up by stimulants taken as articles of diet. It is in vain to give acids, to bleed from time to

time, or to give specific remedies (such as arsenic or dulcamara), unless the patient will submit to proper diet. If patients will take so many glasses of wine a day, they must expect that the disease will be so much the worse. Alkalies, as well as acids, are said to be useful in this disease; and I have no doubt that they are so. The treatment of the disease, so far as the parts are concerned, is empirical. I have no idea how arsenic and these other things can act; but the treatment by bleeding (local and general), by low diet, and by the use of the warm bath, is very rational.

VESICULÆ.

We now enter upon the consideration of those inflammatory diseases of the skin, which are characterized by the secretion of fluid under the cuticle. I shall begin by speaking of those which are characterized by the secretion of a thin *watery* fluid; and among these, of such as exhibit very *minute* collections. This description applies to those diseases which are termed *vesiculæ*. If the liquid be not water but *pus*, the diseases are called *pustulæ*; if the secretion be water, and the collections are *large*, the affections are called *bullæ*. Vesiculæ and bullæ merely differ in point of size. The contents of a vesicle, therefore, are serous. They are also called *limpid*; but "*limpid*" is an indefinite word; and it is therefore better to say "serous."

A vesicle is defined, by Dr. Willan, to be a small orbicular elevation of the cuticle; containing *lymph* (we had better say *serum*); sometimes clear, transparent, and colourless; but often opaque, whitish, or coloured. The serum may be quite clear, or it may be rather opaque, or purple; and such an eruption as this may be succeeded, either by a scurf, or by a scab. If the fluid be absorbed, and the cuticle which is detached rub off by degrees in minute portions, you have *scurf*; if, on the other hand, the fluid be not absorbed, but the cuticle is ruptured, you then have a *scab*, formed by the drying of the fluid, as it exudes. A scab may be formed either by serum, or by pus; therefore you may have a scab in vesicular diseases. A scab is defined, by Dr. Willan, to be a hard substance, formed by fluid discharged from an ulcerated part.

MILIARIA.

The first disease among those which are characterized by a minute collection of watery secretion, and of which I shall speak as being the most minute,—as having the smallest vesicles,—is the miliary eruption; called, in Latin, *miliaria*. In this disease the vesicles are exceedingly numerous, exceedingly minute, and about the size of millet seeds; whence their name (from "milium," *millet*). There is a slight inflammation of the skin, and a slight rash;—sometimes a little more; and then the disease is called "*red* miliary eruption." If there be scarcely any, or what there is disappears, and there be only white vesicles, then it is called "*white* miliary eruption." Some imagine that the red variety is neither more nor less than scarlet fever. Formerly the diagnosis was so imperfect, that many cases of miliary

fever were called scarlet fever. However, if there is much inflammation, the skin will be red; if not, it will look white, from the number of these little vesicles. These miliary eruptions are, very frequently, nothing more than attendants upon other diseases. They will come on at an uncertain period of various cutaneous diseases. In measles, and in scarlet fever, you continually see a little miliary eruption. I have frequently seen it on the hands, in the case of acute rheumatism. This eruption is most abundant on the breast, neck, and back; on the face and extremities it is less copious; and it will appear and disappear in uncertain order.

If the disease be very copious, indeed, the eruption is immediately preceded by an unusual degree of languor and faintness; and by a profuse perspiration; which perhaps accompanies it the whole of its course; and which is sour to the smell, or smells like rotten straw. There is sometimes a sense of heat, pricking, and tingling in the skin, before the eruption comes out; and even during its continuance. The vesicles at first are exceedingly small, and filled with transparent lymph; but, in about thirty hours, the lymph will become more or less opaque and milky. The tongue may be affected. It may be dark and red at the edges; and the papillæ may be elongated. There may be aphthæ of the mouth and fauces. The duration of the disease is very uncertain. It is said to last from seven to ten days, or longer; but crop after crop may come out, and protract the case for six or seven weeks.

This disease is supposed, by Bateman, to be nothing more than the effect of bad treatment. It was very common formerly, when lying-in-women were kept in a heated room; when a number of blankets were placed upon them; thick curtains were drawn around the bed; and a fire was kept blazing in the apartment. Under all this it would have been strange if they had not sweated, and had a miliary eruption of the skin. It is supposed that there never was a specific disease of this kind; but that it was the result of over-excitement of the body, when there was more or less feverishness. Now there can be no doubt, I think, that there *is* such a specific disease as miliary *fever*; besides the miliary *eruption*, which may be produced by improperly stimulating a person by heat. Formerly in this country, at different times, there was a disease called *sweating sickness*, which was characterized by these very symptoms; and this disease now prevails, from time to time, in some parts of France; as in Languedoc, and Normandy. The disease has frequently prevailed in those places;—not sporadically, but as an epidemic. These are moist places; and the disease is there thought to be (as old writers in this country declare it was) contagious. The fluid from a vesicle has been inoculated without success; but, in the places I have mentioned, people declare there is no doubt of its being contagious. It affects adults, and particularly women. It is said to prevail only between forty-three and fifty-nine degrees, north latitude.

When it comes on in the epidemic form, it may, like most other diseases, be either mild or severe; so that it is divided into *benign* and *malignant*. The "miliaria *benigna*" is preceded by lassitude; fre-

quently by pain over the eyes, and loss of appetite; but persons sometimes go to bed well, and wake in a profuse sweat. Very soon vesicles appear; and they sweat on till they die, or the symptoms cease. Now and then, before the eruption comes on, they complain (as people do in this country) of a sense of heat along the skin; and the sweatings are so profuse that the patient is actually steaming. In the *violent* form of the disease, all the symptoms are intense; but the stomach is found to be particularly affected. What is called *gastro-enteritis*, takes place;—an inflammation of the mucous membrane of the stomach and intestines;—the sweats are very fœtid, and the patient smells exactly like rotten straw. The eruption generally comes out on the second or third day; and continues from two or three days, to two or three weeks. There may be merely scurf afterwards;—the contents of the vesicles being absorbed. Or there may be an oozing from the vesication; and extensive desquamation may ensue. There may be violent headache, with giddiness and delirium. Such is the disease as it prevails in many parts of France. Several persons, in Paris, deny that there is any such disease; exactly as other people will sometimes deny the existence of things, which they do not happen to see themselves.

The treatment of this disease, when it occurs (as *we* see it) from the effect of hot regimen, or a violent inflammatory complaint, consists simply in keeping the patient cool; and the whole will then subside. But *abroad*, when the disease prevails epidemically,—when they have what is called "the sweating sickness," then it is frequently necessary to take away blood; to give a patient fresh air; and, I should think, to sponge him well. It is also necessary to pay attention to the inflammatory state of the stomach and intestines; and to take especial care not to give any thing that will irritate those parts;—to give neither emetics nor purgatives. I should presume that other cases might occur, in which it was necessary to support the patient well.

The appearance of the eruption, as we sometimes see it at the back of the hand in rheumatism, is very well represented in the plate which I exhibit. You perceive that there is scarcely any inflammation. It is a thing of common occurrence; and the disease is easily recognised, in consequence of the extreme minuteness of the vesicles.

HERPES.

The next disease of this description, is one of very common occurrence; but, as far as I know, is without any danger whatever. It is called *herpes* (from ερπω, *to creep.*) It is a vesicular disease, characterized by a great degree of inflammation at the base of the vesicles. You may distinguish it from some other vesicular diseases, by the great degree of inflammation with which it is attended. It is a disease on which you will be continually consulted. Patients are very much frightened; and fancy they have some terrible disease coming; but you may easily quiet their fears. For the most part, very little treatment is required. In most of its forms, it is an acute

affection. It begins, perhaps, with general feverishness; and a great degree of smarting and tingling of the skin. The skin looks red, and clusters of vesicles then appear; it generally lasts from eight or ten days to a fortnight. There is not a large number of vesicles diffused over different parts; but they occur in clusters, and cluster after cluster will appear. Those eruptions which you see coming on suddenly upon the chin, for example, are of this description. At first the contents may be clear, but they soon become opaque and yellow. The scabby mouths of children are nothing more than herpes. Now and then it will occur around the whole body. The patient shall be seized with a violent pricking, tingling, and smarting; and then vesicles are seen which form a cluster. This will go on, cluster after cluster being formed, till a belt is made. In common language this is called *shingles;* but in medical language it is called "herpes *zoster*," (from ζωννμι, *to gird*). Now and then the patient is a little indisposed at first. He has a little headache, and a little feverishness; but, as often as not, there is nothing at all. The disease, when it occurs in separate clusters, is called "" herpes *phlyctœnodes*," (from φλυκταινα, *a pustule*); but when it extends round the body, it is "herpes *zoster*." That is the only difference in the two forms of the disease. In the plate you see there is a great degree of redness,—a great degree of inflammation; and that the vesicles here are larger than in the former disease. Then, again, if you look at that form which runs round the body, you see a high degree of redness. It can make no difference, as to the nature of the affection, whether it occur in clusters or mere patches. There is, at first, smarting and tingling in both; and when this is all over, there is great itching.

There is not the least danger in this disease; and the patient would do well if you gave him nothing. In that species of the affection which encircles the body, however, I believe it is a very good plan to cut the patient off from a little of his diet, and to give him a gentle dose of physic. One of the best applications to the part is the oxide of zinc. It is well not to apply grease; for it irritates the part very much; but if you powder it with zinc, the fluid is generally absorbed, and you find the disease go away. You may thus lessen the smarting, and the irritation; and lessen the duration of the disease. It would go away of its own accord; but you may mitigate it, and give considerable comfort to the patient.

This disease frequently appears in a very local manner; for instance, about the prepuce of the male. On the pudenda of women, also, little vesicles (which are herpes) will sometimes appear. They occur, too, about the lips and angles of the mouth; and children, from picking them, raise a scab; and thereby induce a sore, which lasts for a considerable time. If it occur on the prepuce, it is called "herpes *præputialis;*" but if it take place on the lip, it then receives the name "herpes *labialis*." Moderate antiphlogistic treatment, purging, the application of cold water, and some moderate astringent powder to suck up the discharge, is the best mode that

can be adopted. On the prepuce, it is frequently mistaken for a venereal affection; and patients often go to medical men in a great fright.

Sometimes the disease will be so arranged, that you have a circular form of the patches, with the vesicles only on the circumference; and then it is called "herpes *circinatus*," (from "circus," *a ring*). It is merely a number of vesicles spreading on the outward boundary. This is represented in a plate here. You see that it is all the same disease; and all the forms are characterized by a degree of redness. The great use of knowing the disease is, that you may not mistake it for a serious affection;—that you may be able to give a good prognosis. The patches heal in the centre, and are commonly round; and hence it is called, by the common people, *ring-worm*. The same treatment is applicable to this as to the preceding species; and, indeed, to every form of this disease.

There is one curious species of the disease, where you have all the colours of the rainbow;—for which reason it is called "herpes *iris*." I have not seen it above two or three times. It occurs in circular patches; and each patch is of rather a different hue. It is generally seen on the back of the hands, and it occurred there in the cases that came under my notice. You will find it well described in Dr. Bateman's work. He says, "The central vesicle is of a yellowish-white colour; the first ring surrounding it is of a dark or brownish red; the second is nearly of the same colour as the centre; and the third, which is narrower than the rest, is of a dark colour. The fourth and outer ring, or areola, does not appear until the seventh, eighth, or ninth day; and is of a light red hue, which is gradually lost in the ordinary colour of the skin. The iris has been observed only in young people; and was not connected with any constitutional disorder; nor could it be traced to any assignable cause." In fact, it is only inflammation of various hues. When speaking of inflammation in general, I said that it assumed different hues;—a remark which is illustrated by the appearance of this affection. It is a very *pretty* sort of disease. There is no difference in its cause from the others, and no difference in its treatment. Sometimes we can discover no cause for this affection; but it will come on after some little error in diet. There are concentric circles, so that there may be a succession of these inflammations. Each of these forms of herpes may last a long time.

ECZEMA.

The next disease to which I will direct your attention, is very much like herpes, so far as it is a vesicular eruption; but it differs from it, in having little or no inflammation. This disease is called *eczema* (from εκζεω, *to boil out*). The decided difference between the two affections is, that herpes has a great degree of inflammation, and eczema none. You will frequently see an eruption of vesicles on the skin, without any inflammation; they are larger than miliaria; therefore they are not miliaria, but *eczema*; and if there be inflammation attending them, you call it herpes. That is all the difference.

You will very frequently see this on the neck or hands in summer. The eruption may last only two days, or it may last a considerable time. Any irritation of the skin may produce it. Intense solar rays may give rise to it; and stimulating acrid substances will have the same effect.

The disease, however, is sometimes very severe; extends over the whole body; and proves fatal. Perhaps we should hardly say it was the same disease; however, it is so considered by Willan; this form, called "eczema *rubrum*," is chiefly induced by mercury. Every now and then, when persons have taken mercury, they have been seized with great heat of the skin and feverishness. A number of vesicles, larger than the miliary eruption, have appeared. They have spread all over the body; the cuticle has come off; fluid has exuded; and the irritation been so great, as to make the patient quite wretched. At the same time, the mucous membrane has become affected; and there is almost always cough. This, however, is not all. I have seen more or less disease of the throat; and frequently vomiting and purging; owing to the mucous membrane, which runs from the fauces down into the abdomen, having also been affected.

In this severe form of the disease, which generally arises from some peculiar susceptibility of the constitution to mercury, it is necessary of course to leave off that medicine. It is well to give the patient the utmost supply of fresh air; to open the windows and doors; and to ventilate the room as much as possible. The smell from the discharge is exceedingly disagreeable; and you find it necessary to apply something to absorb it. Nothing answers better than powdered zinc or calamine. The latter is exceedingly mild, and never produces irritation; so that you may have the patient well sprinkled with it. You also find it necessary to support the strength; to give nutritious broths, plenty of milk, frequently porter, and even wine. There is extreme debility of body induced; and I have seen several die from it. Inflammation will come on; and you find a difficulty between supporting the strength, on the one hand, and subduing the local inflammation on the other; so that you have to give, not wine or beer, but good broths; and to trust, on the other hand, to the depleting effect of leeches. The case is one which it is very unpleasant to treat; for after giving the patient the utmost support you can,—tranquillizing his system by opium, and anxiously doing every thing you can,—you will find that, after the lapse perhaps of six weeks, he will die; and it is not to be wondered at, when you consider the extent of skin which is in a diseased condition. It is not *always* mercury which produces this disease; but by far the most *violent* form is that induced by mercury. All the cases that I have seen arose from that source. Other cases will occur, in which mercury has nothing to do with it.

This affection is sometimes attended by the formation of a puriform serum. The disease runs into a pustular form; and is then likely to be chronic, and may last a considerable time. You see that the divisions of the disease are more or less arbitrary; for here

we have a species of eczema which might, with equal propriety, be called *impetigo*; and therefore it is termed "eczema *impetiginodes*." This is represented in the plate I shew you; from which you perceive that there is scarcely any inflammation, compared with the intense redness of "eczema *rubrum*," and sometimes none at all. In this local form of the disease occurring acutely, there is no need of any thing, but just to give the patient a dose of physic that will do him no harm.

Respecting that form of the disease which becomes chronic, and runs into a pustular affection, it really is so nearly allied to pustular diseases, that it will save confusion if I speak of it when I speak of impetigo. Every now and then you see a patient with vesicles in one part, and pustules in another; and therefore I think it better to speak of it under the head of "impetigo." If you choose you may call it "impetigo eczematodes," just as we have "eczema impetiginodes."

SCABIES.

Another disease which is seen more frequently in vesicles than not, is itch. It is spoken of by Willan and Bateman as a *pustular* disease, and it sometimes is so; but generally it is *vesicular*. Every body knows it by the watery heads; and therefore it may come under the head of "vesicles." This is a contagious affection. The two last diseases of which I have spoken (eczema and herpes) are not contagious; but the itch is very much so. It is, however, contagious in the *limited* sense of that word; it cannot be communicated by the atmosphere. You may go as near to a patient labouring under itch as you please, without the least fear of imbibing the affection; provided you neither touch him nor handle him. But the itch is not so easily caught by contact as you might imagine. I have frequently touched people,—taken them by the hand or wrist (not knowing that they laboured under the itch) without catching it. I once caught the affection; but then I was a little boy, and obtained it from the nursery-maid. By washing my hands after touching them, I never caught it from patients. It is only by remaining in contact for some time; by sleeping with a person affected with it; or using something that the patient has touched for some time, that there is any chance of catching it. It is more commonly caught by sleeping with a person labouring under it, than by any other means. It is common for working men who come to London, and sleep in beds where the sheets have not been changed, to catch the disease. It is very common, also, among children who sleep together. More frequently than not, you find the disease caught by persons sleeping with one who has the disease; or sleeping in a bed in which some one labouring under it has slept before.

The itch is called in medical language *scabies* (from "scabo," *to scratch*); and occurs chiefly about the wrists and ancles, the roots of the thumbs, and between the fingers and the toes; but if it be any where, you are almost sure to see it about the thumb. It occurs,

too, on the front of the body, on the chest, and in the axilla. I do not recollect having seen it in the face. These are all curious circumstances, and the reason of them I cannot tell; but it is far more frequently seen at the roots of the thumbs than any where else; then at the wrist; next between the fingers, at the ancles, and between the roots of the toes; and next on the front of the chest. The disease is attended by an incessant itching. A Scotch king is alleged to have said, that no subject deserved to have it, on account of the great pleasure that was derived from scratching the affected parts.

I do not know how long the disease may last; it appears never to wear itself out. It is attended with no danger, except to young children. I have seen it excite such great feverishness in them, that if they had not been cured, it is possible that derangement of the alimentary canal, or of the head, might have been induced. If the patient scratch himself, the vesicles are ruptured. They then dry, and get dirty; so that you have black heads. A little blood probably exudes; but between the dirt drying with the fluid, and a little blood oozing, you have small black heads. In children you may often be mistaken as to this disease; for the irritation is such, that superficial inflammation to some extent occurs. Besides this, between and around the vesicles there is frequently common inflammation of the skin; and it will cause desquamation of the cuticle; so that the appearance of the disease is much disguised. In infants, too, the intense itching makes them rub their legs against each other; and that occasions the disease to be recognized with difficulty; but if you will look at the roots of the thumbs, you will see the vesicular form of the disease, and ascertain its nature.

If the eruption be of a watery character, the disease is called "scabies *lymphatica*;" if it be very rank, resembling pimples, it is called "scabies *papuliformis*." These distinctions are not very important. It is of importance, however, to know that the disease is sometimes characterized by pustules;—large, full, flat-looking pustules; resembling any thing but the little vesicles which you see in other cases. This is called, in common language, *pocky itch*. The common people know the disease well. In refined *medical* language, it is called "scabies *purulenta*." This is a species of the disease often mistaken, from its being so unlike the common form of the affection. It occurs between the fingers, and at the back of the hands and wrist, where you will see large pustules of that description called *phlyzacious*, attended with an inflamed base; and containing a thick yellow matter. When you have once seen the disease, you will have no difficulty in recognizing it again. It is said that this disease is sometimes caught from brutes which have the mange. When there is great inflammation, you will necessarily have suppuration induced. Even when you have the affection in this severe form, you will generally find that, in other parts of the body, the vesicles are very small. It is only where there is great irritation, that this pocky form of the disease occurs. You will recollect the

general rule I laid down;—that if you look all over the body, you will see the true form of the disease, in some part or other.

I believe I mentioned, when speaking of fever, that it is very common after fever for itch to take place. I have frequently seen this occurrence; but whether it came on spontaneously, or whether contagion had been applied before the fever occurred, I cannot tell. The *lymphatic* form is that which generally occurs in such cases. A representation of it is contained in this plate. For the most part, you do not have the disease a thousandth part so severely as this. Some have imagined that this disease arose from a small insect; but that is only a part of the doctrine, that all contagious diseases depend upon animalculæ. Some deny that there is any insect; some declare that they have picked an insect out, and seen it through a microscope; but others declare that they never could do so. Though this is not a dangerous disease, yet it is a very troublesome one; and is held in great abhorrence. If you tell parents that their child has got the itch, they hold up their hands as if it had got the plague.

I need scarcely say that the great remedy for this disease is sulphur; but why, no one can tell. I do not believe that it has any effect when given internally. When I have employed it externally, I never found the cure accelerated by its internal exhibition. It may be employed in the form of vapour; or by means of baths, or in unction. In the latter form, it should be rubbed in night and morning; and if a person do that, he will soon get rid of the disease. Some employ sulphur baths. Some have impregnated water with sulphur; and say they have cured the disease in that way rapidly, and in a more pleasant manner than by rubbing in the ointment. It is said by some, who have had great experience in the disease among the lower orders, that it is more readily cured by what is called *sulphur vivum* than by pure sulphur; if so, it is probably from the acrid matters which the former contains. If there be no great inflammation of the skin, the sulphur produces more effect if you add hellebore, or some stimulating substance. If the sulphur vivum answer better than pure sulphur, it is on account of some stimulating property.

POMPHOLYX.

The last disease which we have to consider, among those which are characterised by vesication, is what is called *pompholyx* (from πομφος, *a bladder*). Willan, and also Rayer, make a separate order of this disease; while the only real difference is that, in those of which we have been speaking, the vesicles are very *small*; while here they are very *large*. I cannot myself see the reasonableness of making a distinct order of diseases, when the symptoms are precisely the same, and the only difference is a difference of size. One might as well call a tumour by one name if it be as big as a nut, and by another if it be as big as the head. However, if the vesicles be very large, they are called *bullæ* (from "bulla," *a bubble*); and because sometimes there are large vesicles in erysipelas, Willan and Bateman

have placed that disease in the order "bullæ;" but as there are frequently only *small* vesicles (and indeed vesicles do not appear essential to erysipelas at all) I have considered it, as Rayer does, under the order "exanthemata."

When there is a very large elevation of the cuticle,—a large collection of water, the disease is called *pompholyx*. It was imagined, formerly, that there was a particular fever attended by an eruption of large bullæ; and it was denominated "pompholyx;" but it is now doubted whether there is a distinct fever of that description. In common continued fever, and in other fevers well known, there may accidentally be a large bulla; just as, in other cases, there are vesicles not larger than a millet-seed;—miliary vesicles. However, this disease, which is characterised merely by large blebs of water upon the skin, is not very common; and yet one can hardly call it uncommon. I suppose I may have seen about twenty cases of the disease. In many instances, it is really nothing more than large *eczema*, or large *herpes*. A vesicle will appear on the skin; and instead of being small, as it is in eczema, it is large; and sometimes there is inflammation round it, like herpes. That is the whole history of the matter. Now and then, you will have a vesicle on the skin of a person out of health; and if it be *small*, it is *herpes* or *eczema*; but if it be *large*, it is called *pompholyx*.

You find, in Bateman, three varieties of this affection. 1. "Pompholyx *Benignus*." There is no great harm in that. 2. "Pompholyx *Solitarius*," because there is only one. 3. "Pompholyx *Diutinus*;" because it is chronic. It is almost a pity to make these names; for who would conceive that there was much difference between, "pompholyx *benignus*" and "*solitarius*?" If it be "solitarius," it is likely to be "benignus;" and one is at a loss to see why sometimes it should have one name, and sometimes another. It is well to recollect, simply, that the disease may come on with only *one* vesicle; or that there may be *several*; and it may last for a *short* time only, or for a *long* time. It is very properly called "diutinus;" but we might as well call many other inflammations by the same term; for many last a long time. I do not know why the term "*chronic*" should not be employed. You will recollect, then, that large vesicles on the skin, occurring as an idiopathic affection, are called "pompholyx." Sometimes there are only one of these bullæ; and sometimes a succession of them; and persons will have them month after month. I have seen all these forms of the disease. A patient in the hospital for some other complaint, all at once, without any reason, has had a great bleb on his foot; and you have nothing to do but prick it, and away it goes. There is no other treatment necessary. But "pompholyx *diutinus*" is a very obstinate sort of complaint; and I never saw any thing do good in it. I have seen it occur under two forms; the one in a worn-out constitution; where bleb after bleb appeared on the skin, which cracked and oozed like a sore; and then, when the body was one mass of these, the health gave way, and the patient died. In the other cases which I have seen, it came on in regular

succession. I recollect the case of a woman who, once a month, had some large bullæ out on her face. They were attended with considerable smarting; the fluid which oozed from them, produced inflammation wherever it went; it then dried up; and the cuticle healed.

I need not say that the form of the disease which occurs in a worn-out constitution, requires to be treated by soothing measures. You must exhibit opium and moderate astringents; sprinkle calamine to suck up the discharge; and support the patient well, by means of wine, bark, and good nourishment. In other cases, where there is no debility, one would attempt to treat the patient on antiphlogistic principles. I did so in the case of the woman, where the disease came out once a month; but the success was very limited. The irritation certainly was diminished; but the eruption came out again. By looking out for local disease, and attempting to cure it; applying the warm bath; and, if any phlogistic state of the system occurred, taking away blood, we should be doing what reason dictated; but more than that I cannot say.

Before I proceed farther, I had better show you those large bullæ which are called "pompholyx." You see how large they are; but I have seen some much larger than these. Sometimes they are not attended with any inflammation around them; but, in other cases, there is a very sharp kind of inflammation, producing smarting, tingling, and a burning sensation. Then, when they break, you have an excoriated surface; and a scab is formed of the fluid and the cuticle together. All at once, a person will have one of these on his face or head, or both; and be much frightened. Here there must be something more than an inflammatory state; because I have treated them with antiphlogistic measures, and have failed entirely.

PUSTULÆ.

We now proceed to another order of diseases of the skin; in which the secretion that takes place under the cuticle, is pus. You will find in this order several very important diseases. There is one, for the most part, of a chronic nature;—*impetigo*. There is another like that I have just spoken of; only it is contagious;—*porrigo*. Then there is another, called *ecthyma*; and there are also *cow-pock*, *chicken-pock*, and *small-pox*. Thus you see that, except in the formation of pus, there is no agreement among these diseases. Some are *acute*, and some are *chronic*; some are *simple* diseases, and some are *contagious*; some of these contagious diseases occur but *once* during life, and others occur *frequently*. Porrigo may occur over and over again; but small-pox, as a general rule, does not occur more than once.

IMPETIGO.

The first disease of the order "pustulæ," of which I will speak, is called *impetigo*. I speak of it first, because it is closely connected with eczema. Eczema, which is for the most part a chronic disease,

is characterized by small watery vesicles; and frequently, instead of clear lymph, has a fluid almost puriform. Sometimes it is *altogether* puriform; and in this latter case, we call it *impetigo*. The two diseases run completely into each other. Neither eczema nor impetigo is in the least contagious. You may touch a person labouring under them, or inoculate with the fluid, and no disease will arise from it;—at least nothing more than irritation.

This disease will occur, sometimes, in circumscribed patches; just as you see in the case of herpes; and then it is called "impetigo *figurata*;" and frequently there is inflammation around, just as in herpes. Now and then the affection is extended very much over the surface; and is called "impetigo *sparsa*," (sprinkled). Now and then there is a thick scab; and then it is called "impetigo *scabida*." The affected part looks like the bark of a tree; only that you see it is not diseased cuticle, but a real scab formed of dry pus. Now and then there is so much inflammation around, that it is called "impetigo *erysipelatodes*;" and now and then there is such irritation, that it is denominated "impetigo *rodens*," (gnawing). It is only worth while to remember, that it may occur in clusters; that it may occur with scabs, with a great deal of inflammation; and that it may occur with ulceration. I would not have you trouble yourselves about the particular expressions. I mentioned that, now and then, the fluid is watery, here and there, instead of purulent; and then it is called *eczema impetiginodes;* and if you choose, because there is pus in other parts, you will be justified in calling it *impetigo eczematodes*. These are the same diseases; only, according to the severity of the irritation, you will have pus or water.

It is right you should know, before we say any more of pustular diseases, that pustules are divided into four kinds; according to their size and figure. If a pustule be small and conically pointed, it is called *achor*. "Achor" is said to take its name from *αχνη, bran*; on account of the branny scales thrown off in the disease; but probably (as suggested by Blanchard) it is derived from *α, without*, and *χωρος, space*; owing to the small size of the pustules. If, on the other hand it be small, but flat, it is called *psydracium*, from *ψυδραξ, a small blister*; if it be larger, and have a sort of cellular appearance, it is called *favus* (a honeycomb); but if it be a fat, large, well-fed pustule, with an inflammatory base around, it is called *phlyzacium* (from *φλυζω, to inflame*).*

In the disease that I am speaking of, the pustules are small;—just as the *vesicles* are small in herpes. They are of the kind called *psydracia*. It is of some use to remember this variety of pustules; because one disease has one species of pustule, and another a different kind. When the itch has pustules, they are of that description called *phlyzacia*. The names given to these pustules are very hard words; and it would have been well had some others been devised; but we must suffer through our forefathers. It is of use to re-

* The lecturer illustrated the appearance of the various kinds of pustules, by a reference to the title-plate of Dr. Bateman's work on Cutaneous Diseases.

member the appearance of the pustules in this disease; because it is sometimes difficult to distinguish the pustules of porrigo from these; and the difference in the pustules, is the principal means of diagnosis.

This disease, which is easily recognized,—on account of its being a pustular affection, and being characterised by the formation of pus in small flat pustules,—occurs particularly on the extremities. You will continually see both men and women with this disease on the front of their legs; sometimes running all around, and sometimes upon the arm. If it be not properly treated, it will sometimes last for a very considerable time. Sometimes there is a great degree of inflammation attending it;—a great degree of heat and smarting; and yet the patient, although he may be married, and consequently have a bed-fellow, does not communicate the disease to his wife. It will last month after month, and sometimes even for years.

The best mode of treating the disease, and the one that I have adopted, has been, to regard it as an inflammation;—taking blood from the arm; applying leeches around the inflamed part, applying cold water, as long as that was agreeable; and then exchanging it for warm; and exhibiting mercury. This is an affection in which, I am sure, a moderate use of mercury is necessary. All this, however, will be of no use, if the patient do not limit his diet. If you do not cut off wine and beer, and in some cases meat, you will not find the disease go away. It is a disease which is exceedingly obstinate, if it be not well treated. If you adopt the plan I have laid down, although you may not *eradicate* the disease, yet you will *lessen* it to a very great degree. The chlorides are sometimes useful, and likewise the yellow wash; but frequently I have seen them irritate the part. Altogether, the best local treatment is the application of some absorbent powder; such as calamine or oxide of zinc; and the constant application of cold or warm water. In the case of the leg, it is indispensably necessary that the patient should keep it, as much as possible, in a recumbent posture;—just as he would do in any other inflammation of the lower parts of the body. In the way of medicine, I am quite sure that mercury, exhibited very gently, is exceedingly serviceable.

In that form of the disease which is the link between impetigo and eczema, the treatment would be precisely the same. You will frequently see eczema of this kind behind the ears; running over the face, and down the neck; sometimes attended with a discharge of water, and sometimes with a discharge of pus. In fact, it may be either eczema or impetigo. When there is merely eczema, you have a great deal of scurf upon the part; so that when the secretion is stopped, the patient looks almost well; and then, when the part begins to run again, you have the neck looking moist and nasty; and having quite a different appearance. Whether it is eczema or impetigo, I believe antiphlogistic treatment, with the moderate exhibition of mercury, and the application of an absorbent powder, answers far better than any thing else. Impetigo cannot be mistaken for any thing else except eczema; and they run very much into each

other. It is a common disease. You cannot go into an hospital, without seeing cases of it. You might almost as well give different names to rheumatism, if it ran down one shoulder, or occurred in both shoulders, or in one shoulder and one knee, as give different names to many of these cutaneous affections. It is very well to mention that they may occur in this way or that way; but to give them distinct names is quite absurd. In Plate xxxviii, in Bateman's work, you will see a representation of the disease called *porrigo*; which representation is nothing more than one of eczema; and the same may be said of the representation of psoriasis, in Plate ix, Figure 2. If there be a watery discharge, it is called *eczema*; if it be matter it is called *porrigo*. Psoriasis, eczema, and porrigo, run into each other.

ECTHYMA.

I now proceed to speak of another disease, which also is not contagious; and is characterized by pustules called *phlyzacia*; — the large, round, well-fed pustules, with an inflamed base. This is a disease which very frequently takes place in a bad habit of body. The disease which I last spoke of (impetigo) takes place, occasionally, in a cachectic state of the system; but frequently it takes place in persons who are in other respects very well. The disease which I now speak of (ecthyma; from *εκθυω, to break out*) is one which commonly occurs after small-pox, measles, and scarlet fever; and now and then after syphilis. Occasionally, I believe, it is itself syphilitic. It is characterised by pustules which are all distinct. In impetigo the pustules cluster; and when they are aggregated, they sometimes form clumps or clusters; and now and then they occur over a great extent; so that sometimes you have clumps, if I may so speak, and sometimes diffused patches. But in ecthyma, of which I am now going to speak, the pustules are all pretty distinct, and sometimes very large. You will at once see, by the plates, the difference between this disease, and that of which I spoke last. If you were to look at a patient, without knowing any thing of his history, you might think that he had the small-pox. You will continually see this affection in patients in the venereal wards; it having come on in consequence of taking mercury. The pustules, you observe, are all distinct and round. They are large, circular, and full of matter; not flat on the top, but globular. I have seen cases exactly like small-pox; and indeed I once knew a case sent to the hospital for small-pox, merely in consequence of the resemblance of the pustules. Now and then you have the pustules remarkably large. When I say they are *full*, I mean they are *distended*. Whether they be large or not, the discharge concretes into a dark-coloured scab. I recollect having had this disease when a child; for I have had a taste of most diseases. I remember being very scabby for many months; so that I was quite ashamed to be taken out for a walk. It is a disease which lasts a considerable time. Persons who say they have merely had gonorrhœa, frequently have an eruption exactly of this

description. It is very easily recognized. In the first place you see that there are *pustules*; therefore the affection belongs to the order "pustulæ." You also see that they are *phlyzacia*; that all of them are distinct; and that some of them run into scabs. For the most part they are not very numerous; but when they are small they may be so. In impetigo they are circular, and not so distended; and have little flat tops. Sometimes in impetigo, they will congregate into one large mass; but in ecthyma the scabs are all distinct, though they may be large.

One of the varieties of this disease is called "ecthyma *vulgare*;" and it certainly gives a person a very vulgar appearance; but if it be a little darker, it is called "ecthyma *luridum*." (If lepra be dark, it is called "lepra *nigricans*;" and it is a pity that the same adjective is not employed here.) If it occur in children, it is called "ecthyma *infantile*." We might as well apply a separate epithet to measles, accordingly as the affection occurred in infants or adults; but you see that this fondness for subdivision runs throughout Willan's arrangement. I mentioned that the disease generally occurs in a bad habit of body; and if it take place in a very bad habit, it is called "ecthyma *cachecticum*." It will now and then occur (as is the case with almost all cutaneous diseases) with a sharp inflammation; and may last for a short time;—just like herpes, or some other inflammations which produce mere serum, or which cause no secretion at all, but constitute a mere redness. They begin with inflammation of the skin, and feverishness; but the result of this disease will be suppuration. For the most part, however, ecthyma is a *chronic* affection, and lasts a considerable time; the patient being very much out of health.

In these circumstances, the most eligible treatment is to strengthen the patient, in the best mode you can. Allow him wine, porter, meat, and fresh air, every day; and the warm bath. If there be strength enough, I know that the employment of the *cold* bath is very good. I would use the cold shower-bath in cutaneous diseases, when the patient's strength was able to bear it. Very frequently the disease is syphilitic; and although the body is feeble, you find it necessary to give mercury, as well as to employ tonic medicines. Because you give mercury, it is no reason why you should not strengthen the patient, as much as you can. It is frequently a good practice to allow wine, porter, and meat in abundance; and to give tonics,—such as wine and bark; while, at the same time, you employ mercury. Sometimes you may alternate them.

RUPIA.

There is a disease very much like ecthyma; and indeed it appears to me to be exactly the same; but it is placed by Bateman in the order "vesiculæ," merely because the disease is serous instead of pustular; and Rayer places it in the order "bullæ," because the vesicles are large. It is called *rupia* (from ρυπος, *filth*). It occurs under the same circumstances as ecthyma; the secretion soon

becomes purulent; and, after a time, there are the same large black scabs; and no one could then tell whether the disease was rupia or not. For the sake of consistency, it may be necessary to make two diseases of these; but I am satisfied that rupia is nothing more than ecthyma;—that ecthyma and rupia are varieties of the same affection. All I wish you to remember is, that ecthyma sometimes begins with serum; which soon becomes thick and turbid. There is another reason for making the two the same. In rupia there is frequently a scab, which becomes conical; so as to have exactly the shape of those shell-fish which stick to the rocks. This form of it is called "rupia *prominens*." In ecthyma there is frequently the same occurrence; the scab will assume exactly the same appearance; and the treatment of the two diseases is exactly the same. I cannot but think it trifling to separate them in this way. Although Rayer finds fault with Willan for subdividing these affections, yet he is over minute himself. However, I will show you (by these two plates) what is meant by "rupia." The affection will occur in little children, particularly if they have been thrown out of health by measles or small-pox; and sometimes it will even occur after cow-pock. You will observe that the vesicles are circular, with inflammation around; and they have a black scab. They occur distinct too; just like the pustules of ecthyma; and you find they are globular; only the contents are watery. Where the disease has been purulent from the beginning, I have seen dark scabs. Rupia, too, is as frequently syphilitic as ecthyma; and just as frequently requires mercury. I would put ecthyma and rupia together; just as I would put together lichen and strophulus, erythema and roseola; and just as I would make no distinction between the orders "vesiculæ" and "bullæ." I would make some one word to signify all the eruptions comprehended in those terms; from the size of a millet-seed, to that of a hen's egg. There are two kinds of rupia:—"rupia *simplex*," and "rupia *prominens*;" but it is quite enough to recollect the word "*rupia*." It is a very common affection. There is a man in St. Thomas's Hospital now, with a syphilitic complaint, who has one of these pustules on his arm.

When this affection occurs in adults, they require support; and now and then you will have to give mercury. With respect to local applications, I have never seen them do any good. You should keep the parts clean; and when the scales come off, it is well to use a dressing of oxide of zinc, or Unguentum Hydrargyri.

PORRIGO.

The next disease that I will mention, and which is also a chronic affection, is of a contagious character. The two preceding diseases, (impetigo and ecthyma), together with rupia, are perfectly free from contagion; but there is another, a chronic disease, called *porrigo*, which occurs particularly in the head; and is exceedingly contagious.

In porrigo the pustules are different from what they are in those other two diseases. In impetigo they are little pustules, and flat;

in ecthyma they are large globular pustules (phlyzacia); but in porrigo (or *scald-head*, as it is sometimes called) they are either small, with pointed tops; or large and flat;—that is, they are either favi or acores. If you look at the scald-head of a child, when there are pustules, you will sometimes find them exceedingly small, with pointed tops;—therefore they are *acores*; and sometimes large and flat;—therefore they are *favi*. The disease is *contagious*, but not *infectious*. It is commonly caught by children sleeping in the same bed, rubbing their heads upon the same pillow, or wearing the same night-cap. Frequently it is caught at school, by children putting on each other's hats or caps. I have no doubt that many diseases which occur in the head, are called *porrigo*, which are not. I think I have seen enough to justify the opinion, that many cases of *eczema* are called *porrigo*. But this disease, though it usually affects the head, may occur in various parts of the body.

It sometimes occurs in distinct patches; and it is then called "porrigo *scutulata*," (from *scutellum*, a little shield). Now and then it occurs with a great deal of inflammation; and in distinct pustules, not clustering together so much; and these being favi, it is called "porrigo *favosa*." Sometimes it has dry laminated scabs, of a yellowish colour, containing a white scaly powder; and from their resemblance to lupin-seeds, it has been called "porrigo *lupinosa*." In this form of the affection, the pustules are often very dry. The patches are full of hard grains, which are found to contain a great deal of lime; so that an earthy secretion takes place. You will see the representation of the common form of porrigo in this plate. They are not little globular pustules, but large and flat; and therefore they are called *favi*. When you see an eruption occurring in the head, of a pustular kind, lasting some time, you may be almost sure it is porrigo; but if you ascertain that there are small pustules (acores), or that they are large and flat (favi), then you may be sure of the nature of the disease. It is said to occur in other parts of the body; but I do not recollect seeing it. Impetigo, eczema, and ecthyma, are common enough on the extremities; but porrigo is much more particularly found on the head. It is one of the most contagious of cutaneous diseases. Drinking out of the same mug, or giving a kiss (if any one could be tempted to do so), would, I should think, communicate the disease. If a man had been married, for twenty years, to such a female as is represented in this plate, and his wife were very ill, certainly he might be tempted to give her a kiss; but not otherwise.

Porrigo takes place far more frequently in children than in others; and it very often cures itself, when it is thought to be cured by medical means. It lasts for a certain time, and gradually declines. Children have it for a great number of years; and then, as they grow older, it ceases. There are diseases which are common to infancy, which gradually disappear as the subjects of them grow older; and scald-head is one of them; but I have seen persons labouring under it, who have attained their twentieth or twenty-fifth year; and who

said they had had it all their lives. You find a variety mentioned by Bateman, under the name of "porrigo *furfurans*," where there are no pustules, but laminated scabs. I believe this is nothing more than eczema; and I do not think it at all contagious.

As to the treatment of this disease, it is one of the most obstinate that you can take in hand. You often find great inflammation; so that on approaching your hand to the patient's head, you will find great heat; and you should certainly premise your treatment by antiphlogistic measures;—by taking blood from the neighbourhood of the head, and by applying cold water. These things are certainly useful, and appear to be indicated by common sense; but they are only useful to a limited extent; and you will, as I just now said, find the affection very obstinate. It is sometimes of great service to give mercury. I may mention that "Plummer's pill" first obtained its credit by curing a disease of this description. Dr. Plummer (Senior) of Edinburgh, states, in the "Edinburgh Essays," that he had a case of scald-head, for which he gave some common form of mercury; but the patient was no better. He then gave it mixed with a little guaiacum and antimony; and the patient presently got well. This pill was much employed by him afterwards, and others also used it; till at last it became well established; and "*Plummer's* pill" is now as well known as "*Dover's* powder." I much doubt whether it has any efficacy beyond an equal proportion of calomel. At any rate, I do not think that a grain of guaiacum can make any difference in a pill; and as to antimony, I believe, unless it produces nausea, it is not worth the name of medicine. I have made comparative trials with calomel and Plummer's pill; and I can say that I never found the latter at all superior to the former. I think it impossible to conceive, that a grain of guaiacum can make itself known in the constitution. However, mercury, is often useful; and so also is sarsaparilla; as well as other things of that description.

As to external remedies, besides antiphlogistic measures, astringents are very useful; such as oxide of zinc and calamine. If there be but little inflammation, you find tar-ointment, united with that of nitrate of mercury, serviceable; and sometimes an ointment of the red oxide of mercury. These stimulating applications are often exceedingly useful. I have seen cases get well under the use of cocculus indicus. It is used to destroy vermin in the heads of children; and if you put a drachm to an ounce of grease, you have a stimulating ointment, which is often beneficial. Sulphur, too, has been employed. A wash of the sulphuret of potass is sometimes found advantageous in this disease. But among external applications, when there is no great inflammation present, tar and citrine ointment are among the best. I need scarcely say that the head should be closely shaved, and kept very clean.

This disease will sometimes occur without an eruption; so that we have an affection classed with those that are pustular; and in which, nevertheless, there are no pustules; but this inconsistency we cannot avoid. The hair will sometimes drop off here and there in patches

leaving the surface smooth; and this disease is said to be contagious. It is a very common affection; and is called "porrigo *decalvans.*" I believe it is very common in the West Indies; and I have seen it in children who have come from thence. It is said to spread in schools (just like the other forms of porrigo) from the children wearing each other's caps. There is a doubt as to whether this should be called *porrigo.* The skin is smooth; and I am sure, in many cases, this is the entire disease. Here is baldness without any reference to pustules, or vesicles, or an inflammatory affection. Sometimes half the head will be bared in this way; and sometimes the whole head. I had a little patient, last year, whose head was becoming perfectly smooth all over. I could do nothing with her.*

Stimulating applications are among the best. I should recommend you to use red oxide of mercury, and others of a similar description; in fact, treat it as you would do the other forms of porrigo. You must keep the head well shaved all round, and very clean; and by applying stimulating applications, the hair will at last come on. It is said that there is no doubt as to its being contagious; but I have not seen it so. It is by no means uncommon; but, like the other forms of porrigo, it will cease after a time. I need not say that, in the various other forms of porrigo, when there is a scab, in order to employ the ointment with effect, you should put plenty of it on; and when you have softened the scabs, you must have them taken off. You should, however, have them softened as much as possible at first; and for this purpose a poultice is sometimes necessary.

To shew you how very contagious these diseases are, I may mention that I recollect a barber who had a child with a scald head, and he kept a razor specially for shaving it. One day, by mistake, he shaved himself with it; and although he had washed and stropped the razor well, and (like a true barber) put it into hot water first, yet in consequence of using it to his own beard, the disease came out upon his chin, about a week afterwards. I saw it distinctly; and he told me the history of the case. Small circular pustules came out. You cannot too strongly impress upon the minds of people, the necessity of a child's dress being kept isolated in this affection; lest the disease should spread.

These may be said to be all the *chronic* pustular diseases. Those which I mean next to speak of, are *acute*; and occur but once during life. They are diseases which we see every day; namely, chicken-pock, cow-pock, and small-pox. It is now believed, by a great many, that the two latter of these affections are one and the same; and some go farther, and think that even the chicken-pock is only a modified form of it. However that may be, these diseases are all exceedingly similar; so far as they are *pustular;* so far as they are all highly *contagious;* so far as they are *acute* diseases; and so far as, for the most part, they occur but *once* during life.

* The case is described in the "Medical Gazette;" Volume vii; Page 639.

VARIOLA.

I will now consider a very important pustular disease; called in English *small-pox*, but in medical Latin, *variola*. I understand that the word "*pock*," or "*pox*," is of Saxon origin; and comes from the word *poccadl;* which is derived from the word *pocca*,—a "bag" or "pouch;" or *pochcha*, which means the same thing,—a "little bag." The term *small* was added to it in the third or fifth century;—I suppose to distinguish it from the *great* pox. Some etymologists say it is called *variola* from the word *varius*,—"spotted;" or else that it comes from the Latin word *varus*,—a "pimple." How the point is to be settled I do not know. The disease is called in Spanish *viruelas;* and some derive this from the Latin word *virus*. The etymology, like the disease, is a mass of corruption. Mr. Moore has written an admirable History of the Small-pox, and another of the Cow-pock; both of which works are exceedingly interesting, and well worth reading. He says that the word "*variola*" was first found in an old Saxon Chronicle, ascribed to Marius (Bishop of Vaux, in Switzerland); who says that a violent malady, attended with purging, broke out in Italy and France, in the year 570. The disease, before the eruption appears, is marked by certain premonitory symptoms. The patient, first of all, is generally seized with languor, drowsiness, vomiting, and pain of the head and loins;—just as might occur in any other fever. Here is the head affected, (drowsiness and languor); here is the stomach affected, (vomiting); and here are the loins affected; as almost always occurs in common continued fever. There is pyrexia, universal feverishness, quickness of pulse, and also tenderness of the epigastrium; but the pain in the loins, and the tenderness of the epigastrium, are frequently most intense; being very marked in this disease.

After these symptoms have prevailed a day or two, there appear, first on the face, and then successively throughout the body and extremities, small red spots (*papulæ*) *;* and these rise into elevated pimples, and these again into hard tubercles,—in the common acceptation of the word. So that, first of all, you have mere red *spots* on the skin; these spots rise into what are commonly called *pimples;* and then these pimples become very hard, (*tuberæ*). These pimples become pellucid; and on the fifth day (counting from the first attack of feverishness, headache, and so on), they become pustules. From being pellucid, they have purulent contents opake and white; and those which are large, are at first generally depressed in the centre. This is worthy of notice. They are not perfectly filled at first; but are filled in the circumference more than in the centre.

When this eruption is taking place, if the individual be an adult, there is frequently a great tendency to profuse sweating; and if the patient be a child, there is a great tendency to epileptic fits. It is said that one fit forebodes a mild disease, whereas several forebode a

severe one; but I should suppose that if the child had no fit at all, it would forebode something better still. Where there is but one fit, there is so little mark of severity of disease, that it often has been supposed a favourable symptom; but I should think it is not so favourable as where there is no fit at all.

On the eighth day,—counting always from the first,—if there be much eruption, the face swells from the inflammation. If the disease be pretty severe, the cellular membrane beneath falls into more or less irritation, and secretes abundantly; so the face swells on that account. The same circumstance causes the eyes to close; and the continued extension of the irritation causes the mouth to "run," and the fauces to inflame. On the eleventh day, the pustules are at their height;—as full and as numerous as they will be; and the swelling of the face, the "running" of the mouth, and inflammation of the fauces subside; and then the hands and feet swell;—first the hands, and afterwards the feet. You see that the irritation has diminished above, where the disease first appeared; and has extended below. The spots spread down the body and arms, towards the hands and feet; and as these parts *suffer* the last, so they *swell* the last; and when the swelling commences in them, the irritation has already begun to subside in the parts originally affected. The pustules are then said to maturate; that is to say, they grow ripe and perfect. When this general suppuration has occurred, and the formation of pustules is perfect, then a fresh attack of feverishness occurs; and this is called the *secondary fever*. That which occurs in the beginning,—ushering in the disease, and continuing for a little time,—lessens when the eruption comes out, and is called the *primary* fever; and when the eruption has gone on for a certain number of days, and the general irritation is lessened, a second attack of feverishness takes place. The eruption is now perfect;—all the pustules having attained their full development, and each pustule having become filled with matter, and of its full size. When the pustules begin to diminish, and the matter to be absorbed, the common people, especially old women, call it *the turning*. You will continually hear, in practice, that the disease has *turned*; and the meaning of that is, that the pustules have begun to subside.

The pustules on the extremites, as I have said, appear later than those on the face and trunk; and their contents, I should also mention, are more limpid. There is not that excessive inflammation there, which produces *pus*; but only a *puriform fluid* is secreted;—a limpid fluid rather than perfect pus; and in them the fluid is frequently absorbed altogether, without any exudation occurring. In the other pocks, throughout the body and the face, the matter very frequently *exudes*; but those upon the extremities, particularly the hands and feet, lose their contents entirely by *absorption*; so that the elevated cuticle remains flaccid and empty. I need not say that those pustules which are on the extremities, as they *come out* last, also "turn" last. The pustules, too, when the matter escapes, generally dry into hard scabs. The matter exudes; a scab is formed

of this dry pus; and frequently a little ulceration is found to take place; so that a pit is left. The secretion is not merely superficial and cutaneous; but ulceration of the cutis, and even of the cellular membrane underneath, takes place, so that marks are left. These pustules are nothing but so many minute abscesses; and, of course, there is more or less destruction of the parts, and a cicatrix is left on a small scale. If many of these run together, then a person is said to be *seamed*. There are whole tracts of loss of substance.

From the inflammation which affects the eyes, there is not unfrequently (in the violent form of the disease) albugo left, or staphyloma. Pustules frequently form around the eyes, and on the cornea itself; and there is often ophthalmia; and where there has been a pustule on the eye, it is common (as I have said) to have albugo, and even staphyloma. If you had visited a charity for the blind formerly, you would have seen a great number of the inmates rendered so through the small-pox, and having staphylomatous eyes. When the disease is over, it frequently leaves scrofula. Persons may have enlarged glands of the neck; or they may have enlarged mesenteric glands; or they may have phthisis. Frequently it leaves rupia and ecthyma. Diarrhœa, too, is not unfrequently left after it; and the mucous membrane of the intestines sometimes falls into chronic inflammation.

You will observe, if I again enumerate the days on which the changes take place, that they are first according to the *tertian* type, and that they then assume the *quartan* type. The day on which the disease begins is the first day; then on the third (which is according to the tertian type) the pustules make their appearance; and then on the fifth day (still according to the tertian type) perfect pustules are formed. The eruption begins as a little spot. This is succeeded by an elevation, which afterwards becomes hard; and this contains something limpid; and then, on the fifth day, the contents become perfect pus. From that time the *quartan* type commences. It is on the eighth day, if there be much eruption, that the face swells, the eyes close, and the mouth "runs;" and on the eleventh day the pustules are all at their height, and there is no farther aggravation of the eruption. This enumeration will assist your memories.

The disease is generally divided into two varieties; the one called *distinct*, and the other *confluent*. In what is called discreet, or distinct small-pox, the pustules do not touch each other. The pyrexia, or feverishness, is of that kind called *inflammatory*; and is attended with a pretty strong pulse, and great heat of the body. The pustules are comparatively few in number; and are all detached. Perhaps there may be very few pustules;—only one, two, three, half-a-dozen, or a dozen; but if there be more, still they are detached. They all look healthy, and have a rose-coloured base; —showing a healthy inflammation. Their contents are good, laudable, praiseworthy pus. The fever, in this form of the disease, lessens when the eruption comes out; and when the eruption is complete, the feverishness is nearly gone. The disease is mild but perfect.

In the other form of the affection, however, (which is called "variola *confluens*"), the pustules are very numerous, and run together. The feverishness is infinitely more violent, and rather of a typhoid character; the pulse is not so strong; the patient is exceedingly weak; and there is delirium. There is often such a violent affection of the head, that it produces coma; and the eruption not unfrequently begins early. There is such violence of the disease, that it begins even on the second day. The pustules are not only far more numerous, but they are smaller;—they are not well-developed, well-formed, well-fed pustules. On the contrary, they are flaccid, and not filled as they should be. Their quality also is bad; for instead of containing a creamy laudable pus, the contents are brown,—perhaps thin and serous; and perhaps there is a brownish ichorous fluid, rather than genuine pus. They not only run together; but, from not being well filled, they appear more or less flat. The feverishness, in this form of the disease, is very little lessened on the appearance of the pocks; and at the end of the eruption it is aggravated very much. Secondary fever of a very violent character comes on. The symptoms occurring in other parts, are also very severe. There is much more ptyalism, much more "running" of the mouth, and much more inflammation of the fauces, than in the distinct form; and in infants there is sometimes violent diarrhœa. In this latter instance, the lower part of the alimentary tract suffers great irritation. Frequently, too, between the pustules, there are petechiæ, vibices, and ecchymoses; there are, in short, red, dark-coloured spots, of various sizes. Sometimes there is bloody urine; and sometimes blood appears in the motions. The secretions are very unhealthy; and there is an exudation all over the body; so that the person emits a very offensive smell. Now and then, patients labouring under this form of the disease, die rather suddenly. The consequences of this species of the disease, too, are more severe than in the other form. In fact, it is "variola confluens" that, for the most part leaves such terrible consequences; such as blindness, phthisis, and diarrhœa;—the latter of which ends in ulceration of the intestines. It is said (but I do not know the fact from experience) that negroes generally have a horny, warty, small-pox; and that the eruption is minute in size. Fibrin is effused into the pocks; which gives them a hard warty appearance.

Among the mucous membranes, those of the larynx and trachea frequently suffer much. Many children die from the upper part of the trachea being blocked up. If you look into the larynx of those who have died of small-pox, you will find it filled with a thick tenacious mucus, and much swelled. It is a point to which Mr. Alcock, the surgeon, has particularly attended; and in consequence of having had my attention directed to it by him, I have frequently examined the larynx of children who have died of this disease; and its state has been such as to astonish me. There has been great inflammation; and such effusion of thick stuff as very nearly to block it up.

The disease rarely occurs more than once during life; and although we may all see instances of its secondary occurrence, yet these are exceptions to the general rule. Like measles, however, and scarlatina, it *may* be had more than once; and it has been known to occur simultaneously with measles and cow-pock; it has existed conjointly with them in the same person. You know that it was a dogma of John Hunter (an assertion without proof) that no two specific diseases could exist, at the same time, in the same body; but it is untrue. You will see persons labouring under itch and syphilis at the same time; and there are plenty of instances on record, of small-pox co-existing with measles and cow-pock; though, in general, one disease runs its course in the body, and then the other. It is mentioned, in the "Edinburgh Medical Commentaries," that measles and small-pox occurred simultaneously in sixteen children. Out of forty-three children who were inoculated, sixteen were at the time labouring under measles; and both the diseases went on together. This occurrence took place at the Foundling Hospital in Dublin.

The cause of this disease is, I believe, in most instances a specific poison generated by an individual labouring under the disease. Children sometimes have it without there being any possibility of tracing infection; but for the most part we can do so. It is a disease which is *infectious* as well as contagious. There is no occasion to touch the patient labouring under it, or any thing he has touched; to be near him is quite sufficient. One reason for thinking that it always arises from another individual labouring under it is that, in Denmark, the disease was made to disappear for many years, by practising vaccination on every individual; but at last the inhabitants grew careless; and being visited by persons labouring under the affection, it again broke out. If, however, the two diseases be the same, the argument falls to the ground; for if the cow-pock be merely modified small-pox, then these are merely instances of the disease occurring but once.

Almost all persons are liable to take the disease;—so liable, that it is hardly right to say that a predisposition is required. From the few there are who escape if the poison be applied, it is a better mode of expression to say, with regard to those who will not take it, that they are *indisposed* to it, than to say that they are *not predisposed* to it. The only thing wanted is, the absence of an indisposition. Persons have been known to escape this disease for forty or fifty years, and then to have it. The same circumstance occurs with regard to hooping-cough, and other contagious diseases. It is supposed that the predisposition to it (if I may use such a word) is strongest in early life; but I believe I mentioned formerly, that this is hardly proved; because most persons take the disease, if they have not had the cow-pock, in infancy or childhood; and therefore there are but few adults left to have it.

Like syphilis, it may occur in the fœtus. The mother may give syphilis to a child in utero, and also the small-pox; and, in the latter

affection, it is singular that the mother may communicate it to the child, without having it herself. Dr. Jenner published, in the first volume of the "Medico-Chirurgical Transactions," instances of two women who were exposed to the contagion of small-pox, a few days before delivery. Both women were, I believe, exposed to it by *infection*; but one woman had had the affection formerly, and therefore she had acquired an immunity; and the other had been inoculated, so that she also had acquired an immunity. Neither of the mothers had the disease a second time; and therefore they served merely as transmitters of the poison to their children. In the one instance, the disease appeared in the child on the seventh day after birth; and the other female brought forth a child covered with the small-pox. Dr. Mead, in his "Treatise on Variola," you will find mentions a similar fact. However, this has not always been the case; for Sir George Baker mentions that two women, who took the disease during pregnancy, brought forth children perfectly healthy; and the latter never had small-pox till they were inoculated; which did not take place till they were three years old. I do not know whether a woman can give syphilis to a child, without the disease affecting herself;—whether she can have the poison conveyed to her system by a man, and yet have no symptoms of the disease, and nevertheless produce a child affected with syphilis. In my experience, wherever syphilis has appeared in a child at its birth, or soon afterwards, the mother has shewn syphilitic symptoms, either then or soon after. It is, however, to be remembered, that we have no immunity from syphilis. We have immunity from small-pox and cow-pock, in consequence of the disease having occurred previously; and when immunity can be produced from a poison, then you see that the system may transmit it, being yet perfectly safe itself.

As to the period at which the disease appears after exposure to the poison, the late Professor of Botany in Edinburgh (Dr. Rutherford) used to say that a party of soldiers were exposed to it, in the natural way; and that the interval between their exposure, and the appearance of the disease, varied from twelve to fourteen days. Dr. Fordyce, who paid great attention to this subject, said that the period which I have now stated was the common interval. However, it is certainly known sometimes to come out earlier. Like other infectious diseases, it is very frequently epidemic; and it is more frequently so at the vernal equinox, than at any other time. It is said, by Sir Gilbert Blane, to resemble measles and hooping-cough, in being more fatal during an epidemic than at any other time. After it has been absent some time, it is also more severe than at other periods. It is also observed to be like all other epidemics in another respect;—those who have it first, have it most severely.

It is said that this was not known by the ancients to be a contagious disease; and, indeed, they confounded measles, scarlet-fever, and small-pox together. Rhazes, an Arabian, and one of the oldest writers on the subject, ascribes it to the fermentation which the blood

undergoes, when the youth is becoming a man. Sydenham (who has given so perfect a description of small-pox, that it can never be surpassed) had no idea that it was a specific contagion. He thought that scarlatina was most prevalent in the autumn; and ascribed it to a moderate effervescence of the blood, arising from the heat of summer. He entertained much the same opinion of measles and small-pox. I believe I mentioned that Gadbury, the astrologer, wrote (without fear of being laughed at) that plague was not more infectious than the small-pox. Then another worthy man (Etmuller) who is much quoted by German writers, says that no doubt small-pox and measles take place from the child drinking morbid nourishment in the uterus; and from sucking it in the milk after birth. He says,—" It is not probable that those who assert that measles and small-pox arise from copulation after conception has taken place, are correct; and therefore I suppose that the foundation of measles and small-pox lies in the milk, which the child takes first when in utero, and then afterwards when born."

Small-pox was distinctly declared to be contagious by Boerhaave; who mentioned contagion as the only cause of it. But though nobody now doubts that it is contagious, yet its spread is greatly influenced by certain states of the atmosphere. Violent cold will check an epidemic small-pox. The wind called *harmattan* stops small-pox, just as it does the plague; and it is said to prevent the effects of inoculation; so that if you inoculate when that wind is blowing, it is a fruitless task. I mentioned this particular circumstance, when speaking of contagion in general; in order to shew what influences are exerted on it. Sir John Pringle says, that the small-pox was carried by some troops, on one occasion, to the camp; but, in consequence of some peculiar state of the atmosphere, it would not spread. Van Sweiten mentions a similar fact. Dr. Odier, a physician at Geneva, mentions that when this disease was not epidemic, it would not spread by contagion. When children had the disease by inoculation, if they were carried about the streets, and brought into contact with other children, during the eruption, there was not a single instance of a child catching the disease. Sir James M'Grigor says, that when the disease was prevailing extensively at Bombay, in the neighbourhood of his barracks, although there was the freest communication between the inmates of the barracks and the surrounding population, yet no person about the barracks caught the disease. When we are considering whether a disease is contagious or not, we must set no value upon the circumstance of certain states of the atmosphere putting a stop to it. Contagious diseases, in this respect, are in the same predicament as those which depend altogether upon atmospherical influence. That it is a contagious disease cannot be doubted, when you reflect that it will habitually occur to children, when their parents will not allow them to have the cow-pock.

Small-pox is communicated artificially by inoculation; because the disease which then arises, is much more mild than that which

occurs naturally. The effect of inoculation is to lessen the number of pustules; and thus to lessen the general violence of the disease. The effect of vaccination upon the disease, if it do not prevent it altogether, is rather that of lessening its duration. Inoculation produces the disease with a far smaller number of pustules, and less general irritation; whereas, if a person have small-pox after vaccination, the disease goes on in the usual way for a certain time; and then, all at once, the feverishness ceases, and there is rapidly an end to it. It will terminate, in fact, on the sixth day, instead of the eleventh.

It is found, also, that the disease appears much more quickly when it is communicated by inoculation, than when it is communicated naturally. The affection usually appears on the seventh, or at the latest upon the eighth day, when it is communicated by inoculation; whereas, when it occurs by infection, it is generally from the twelfth to the fourteenth day before it appears;—and consequently you may, by inoculation, be before-hand with infection. If a person have been exposed to the infection of small-pox, and has great chance of having a severe disease, it is right, if you do not vaccinate him, to inoculate him immediately; because you then produce the disease more quickly than it would otherwise occur. The artificial form gets the start of the natural; and the patient has the former, instead of the latter. Dr. Fordyce also mentions, that the quantity of matter applied, greatly influences the severity of the disease. He says, that if you introduce only a small quantity of matter, a less severe disease is produced, than if a considerable quantity be employed. On this account, the quantity of matter should be as sparing as possible. It should only be just sufficient to produce the disease. In cow-pock, however, a different rule must be observed; because the object, in that case, is to have the affection as complete as possible; and therefore a considerable quantity of matter must be introduced. You must not be contented with making one insertion; but must make several. I wish you to remember, however, that, in small-pox, the object is to have the disease in the mildest way possible; and therefore the smallest possible quantity of matter is to be introduced.

The fact of inoculation rendering the disease milder, appears to have been communicated to the Royal Society of Edinburgh in the eighteenth century; and the knowledge of it to have been brought to England from Constantinople. The knowledge of this fact is said to have existed in China, and Hindostan, for a great number of years. The Chinese were in the habit of placing the crusts taken from small-pox patients in the nose;—having frequently kept them in jars for some years previously. Sometimes they reduced the crusts to powder, and made the children snuff them up;—this was called "sowing the small-pox." The Brahmins are in the habit of scratching the surface of the skin, and then binding upon the scratch a piece of cotton moistened with the pus. It is said that a particular caste has the charge of this practice. They, however, prepare the patients for this process by some months' abstinence;—even from milk and butter;

and this would be pretty low diet; for they have no animal meat at any time. This mode of inoculation appears to have been long practised in Persia, Armenia, Georgia, and Greece; but its origin is unknown. Some imagine that it arose in the deserts of Arabia; where there were no physicians or priests;—nothing but old women; and that the knowledge of the fact was acquired by the vulgar. However, the practice appears to have been known, among the peasants, an immense time, in the provinces of Italy, in France, Germany, Sweden, Denmark, and even in Great Britain. In the north of Scotland, the people were in the habit of giving the children the disease, by putting them to bed with others labouring under the affection; or tying threads soaked with pus upon their wrists. But although it was known in this way, among the lower orders, before the enlightened part of the public were aware of it, just as we shall see was the case with regard to cow-pock preventing small-pox, the practice ostensibly came to us from Constantinople. Dr. Timoni wrote to Dr. Woodward on the subject, from Constantinople; and the letter was published in the "Philosophical Transactions" the year after. Pylarini, a physician, also wrote on the Turkish practice; and sent his communication home in 1715; and this was likewise given to the public in the "Philosophical Transactions." Lady Mary Wortley Montague was at Constantinople with her husband, who had been appointed ambassador to the Ottoman court; and she there learned the practice; and, being a couragious woman, tried it, with success, on her own son. On her return to England, she had her daughter inoculated. Caroline, Princess of Wales, wished to have her children inoculated; but was desirous that the experiment should first be made on six felons in Newgate. She obtained the consent of George the First; and the operation was performed. Five of the felons did well; but the sixth did not take the disease, having, in fact, had it previously; but, on account of being inoculated, they were all saved from hanging. Inoculation was now thought favourably of in England; and it appears that, in the first eight years, eight hundred and forty-five persons were inoculated; of whom only seventeen died. At Boston, only one out of forty-five died.

Of course, as this was a new practice, it excited opposition. Whether the practice was good or bad, being new was sufficient to account for this; and many clergymen and dissenting ministers raved against it from the pulpit, and called inoculation the offspring of atheism. Those who performed it, were called sorcerors; and the whole thing was said to be a diabolical invention of Satan. Others, however, were of a different opinion; and Bishop Maddox and Dr. Doddridge defended it; and in doing so employed scriptural quotations. You know that the devil can quote Scripture, to suit his own purposes; and therefore it was very fair for good men to quote Scripture too. However, the reasonable side of the question at last prevailed.

After a time, the practice was nearly relinquished throughout Europe; just as we saw was the case with regard to the use of Peru-

vian bark. After the practice of exhibiting bark had been approved, the good opinion formed of it was entirely lost; so that it became a *drug* in the market; and inoculation was almost disused in England, from 1730 to 1740; and in France it was absolutely forbidden. The truth was, however, that inoculation caused a great loss of life. It saved the lives of a great part of those who were inoculated; but it kept up the pestilence to such an extent, that far more caught it than otherwise would have done so; and it increased the general amount of the disease.

With regard to the success of the practice, I may remark that those who were not medical men, were frequently the most successful. Some Carmelitish friars inoculated the Indians of South America, very successfully; and the most successful inoculators, in every part, were non-medical men. A planter, at St. Kitt's, is said to have inoculated three hundred of his slaves himself; without having lost one. Medical men made a great preparation for inoculation, by purgatives, emetics, and various drugs; and employed all these things also in the course of the disease. They likewise confined their patients to bed, and kept them in a hot room, with a view to encourage perspiration. This practice aggravated the feverishness, and increased the mortality from the disease. Great fury prevailed against it when, in 1754, the London College of Physicians published a declaration in its favour. Inoculation, however, met but with slender success, till the time of a person named Sutton. This quack used purgatives, and common-sense treatment, and succeeded wonderfully; so that he spread inoculation, more than the College of Physicians and all the doctors together. Sydenham practised free ventilation and refrigerants; but Sutton omitted the opiates which Sydenham was in the habit of giving; and gave calomel and tartar emetic. Sutton also restored the Turkish practice of making only a slight scratch with a lancet. The practice, indeed, fell very much into the hands of quacks. Medical men ceased to have recourse to it; but quacks took it up, and endeavoured to turn a penny by it.

Such is the curious history of inoculation. Its efficacy was first doubted; the practice was afterwards approved; then violent disunion and party feeling were excited; the most virulent abuse was poured forth; and the plan dropped altogether. Then it was taken up by quacks; and quacks were frequently much more successful than the doctors; because they did not employ a number of medicines, which did harm. When inoculation was first practised, it is said that only one patient out of fifty died; but now, not above one in two hundred dies; and some have calculated it at not more than one in five hundred; whereas the mortality from natural small-pox was as much as one in six; even where medical aid was rendered; and where there was no medical assistance, the mortality was frightfully great. In fact, at one time, nearly all died where medical aid was not resorted to. The annual deaths from small-pox in England, during thirty years of the last century, were from thirty-four to thirty-six thousand. Before vaccination was practised, and after

inoculation was established, one child in seven throughout Russia, is said to have died from small-pox; whereas Spain, which did not trouble herself about inoculation, suffered far less than any other country; the disease having been kept up in others by inoculation.

There is nothing peculiar in the treatment of this disease. It is only the treatment of any ordinary fever. The utmost cleanliness should be observed; the patient should have plenty of clean linen; and mild antiphlogistic diet will be proper;—at least in the first instance. There is no harm whatever in cold or tepid ablution; provided the body is hot. Some say that they have stopped the disease by affusion; but you may have recourse to tepid ablution, if there be any objection to cold; and as the stench is very great, it would be well to wash the patient with a solution of the chlorides, and to use them freely around the bed. Now and then it may be proper to bleed. The head is sometimes so much affected that, in the case of adults, general bleeding may be premised; or, at any rate, the application of leeches to the temples. The pain in the loins, which characterizes the disease, generally goes off very soon; but the oppression of the head may require local bleeding; or, in adults, *general* bleeding. Usually the latter is not necessary; but every practitioner must judge of that for himself. Purgatives are proper; for the bowels should be kept freely open. By cleanliness, the employment of the chlorides, purging, bleeding (general or local) and low diet, the disease will be got through in the most favourable manner.

But after a time, if debility come on, especially if the patient's pulse become weak, or if the pustules be not well filled, and there be no violent local disease; if, in short, there be any signs of debility, and of the disease assuming a typhoid type,—then wine and stimulants should be given. Sydenham was in the habit of giving opium at first; and I must say I think, in that respect, his practice was bad. You may consider that, in confluent small-pox, when the patient is covered with pustules, such an immense number of little abscesses are equal to one large one. There is universal suppuration of the surface; and the patient requires to be supported, just as he would in the case of a common abscess. It is frequently necessary, too, towards the close of the disease, to give wine, ammonia, and sulphate of quinine; together with good nourishment. But there may be, on the other hand, such sharpness of the pulse, and such general irritation, that measures of this nature are improper; and you must be contented with giving the patient, perhaps, no more than milk or whey, and keep him cool. There is, as I have already said, nothing peculiar in the case; it is only the treatment of fever.

Some have advised the letting out of the matter from each pustule. It is an old practice, but it has been talked of again lately. You might do this with a needle; and it is said there is some utility in the practice. Any inflammation that may occur (whether in the head, eyes, bronchia, or intestines) requires to be attended to. You must constantly be on the look out for these affections; but the

treatment is certainly to be conducted altogether on general principles. You have only to remember that you are treating, not merely an *inflammatory*, but a *specific* disease;—a disease attended by suppuration on the surface. Fresh air, cleanliness, and the chlorides, are very proper;—just as in other cases.

VACCINIA.

The next disease of which I shall speak, (the cow-pock), is one which is put, by Drs. Willan and Bateman, in the order *vesiculæ*; but although there are only vesicles at first, the contents become so turbid that, at last, there is genuine pus; and I think it is much more consistent altogether to put it in the same order with small-pox. Indeed the cow-pock (called *vaccinia*, from "vacca," *a cow*) is believed, by many, to be nothing more than a modification of small-pox;—to be merely the small-pox, modified by passing through the cow. There can be no doubt that small-pox is an affection which cows, and perhaps other brutes, may have. Most probably you have seen the accounts, published in different journals, of some experiments that have been made with a view of ascertaining this point. Clothes have been taken from patients labouring under small-pox, and laid on cows; and they have had the disease called *cow-pock*. If the disease be really small-pox, modified, we then see no wonder in the circumstance that *cow-pock* generally affords an immunity from *small-pox*. Cow-pock, however, is a far milder disease than small-pox; and is strictly contagious. It cannot be communicated by *infection*, as small-pox may; it is only communicated by palpable matter.

The disease, given artificially, begins a few days after the poisonous matter has been inserted into the body. By a slight scratch, or by a wound of any description, a small transparent pearl-coloured vesicle is formed, with a circular or somewhat oval base. The upper surface is more elevated at the margin than at the centre, till the end of the eighth day;—the margin itself being red, turgid, shining, and roundish; so that it often extends a little over the line of the base. The vesicle contains clear lymph, in little cells that communicate with each other. About the eighth or ninth day, it is surrounded by an areola, varying in diameter in different cases, from a quarter of an inch to two inches; and is usually attended with considerable swelling, and hardness of the adjoining cellular membrane. The areola declines from the twelfth day. The surface of the vesicle then becomes brown in the centre; and the fluid concretes into a hard round scab. The colour afterwards becomes black; and so it may remain for two or three weeks. It is important to remember that there is left a permanent cicatrix, about four or five lines in diameter; the surface of which is marked by pits, denoting the number of cells of which the vesicle has been composed.

The vesicle, you will remember, is formed about the *sixth* day after the insertion of the virus. About the *seventh* or *eighth* day there is an inflamed areola;—a swelling and hardness; and it is on the

eleventh day that all the symptoms decline. The vesicle then becomes muddy, and darker. If there be any pyrexia of the system, it occurs about the *eighth* or *ninth* day. Now and then (and I have seen such a case myself) the disease has not appeared for two or three weeks after vaccination; and then suddenly the disease has begun, inflammation has taken place, and the affection has gone through its regular process.

If there be a violent degree of inflammation, or if the disease vanishes too rapidly, or if there be any variation from its proper course, you must not imagine that any security is given from the small-pox. If, on the one hand, there be too little inflammation, so that the affection soon subsides, and no genuine vesicle is formed; or if, on the other hand, there is too violent an inflammation; then, in either case, you may doubt whether the disease will be of any use. Nay more,—if the cicatrix, after the disease has appeared to go through its stages properly, is not of the description which I have now mentioned;—if there be not a permanent cicatrix, about five lines in diameter (a little depression, with very minute indentations); you may then suspect that the disease has not been perfect. You may recollect my having mentioned that, in the case of all contagious diseases, you may have a disease of the greatest mildness, or the greatest severity. A contagious disease will not only vary as to the time at which it appears after the virus has been applied, but it will vary as to the time in which it goes through its course; and it will vary as to its degree; so that I am satisfied that the plague will sometimes occur with only a slight indisposition; and we continually see gonorrhœa so mild, as to last only twenty-four hours; whereas, in other cases, it will be so severe as to last some weeks. Now this general fact is strikingly shewn in cow-pock. You continually have it die away, from the disease not being fully formed; and, on the other hand, you sometimes have it so very violent, that the whole course of the affection is disturbed. Nothing should occur for twenty-four, or perhaps forty-eight hours; and then there should be a little irritation. A vesicle ought to be gradually formed; on the seventh or eighth day there should be an areola; and all the symptoms should decline on the eleventh day. When it is all over, you ought to see a dark and hard scab, for two or perhaps three weeks; and then a permanent cicatrix should be left; with little indentations, arising from the cells of which the pustule has been composed.

This disease, in the greater number of cases, gives immunity from the small-pox; and where it fails (which it frequently does) the small-pox is, in the greater number of instances, milder than it otherwise would have been. In general, when that disease occurs after cow-pock, it suddenly stops; it is ushered in by great pyrexia; and then, about the sixth day, it suddenly declines.

I believe I mentioned that the effect of inoculation for small-pox, was not of this description;—that it caused the disease to be produced with a smaller number of pustules; whereas vaccination does not lessen the number of pustules, but shortens the course of the disease;

so that, about the sixth day, all the violence generally ceases. This, however, is not a universal occurrence; because some patients die of the small-pox, after they have had the cow-pock. At first, it was imagined that cow-pock was a *certain preventive* of the small-pox. That, however, was a hasty conclusion. Because it prevented the disease for a certain time, and in the majority of cases, that afforded no solid basis from which to infer, that it would prevent it in *all* cases, and for the rest of life. Further experience was necessary, before such a conclusion could with propriety be drawn. But we may now safely assert, that a great number of persons who are vaccinated escape the small-pox; and where persons do *not* escape, the greater number of them have the disease very *mildly*. I believe the whole of the matter comes to that.

This disease produces only a single vesicle or pustule. It does not produce a number all over the body; as small-pox, and other pustular diseases, do. As it is very desirable that the disease should be fully formed, and the constitution thoroughly affected by it, it is the practice to make several insertions of the matter; perhaps two in each arm. The arm is as convenient a place as can be chosen; and it is usual to make two wounds in it. The lancet should be held so that the matter may gravitate into the wound. There is no treatment required in this affection, unless you choose to give the child a mild aperient.

As to our knowledge of the effect of this disease, in preventing the common form of small-pox, I may mention, in a few words, that we are indebted for the publication of the fact to Dr. Jenner. In 1768, when he was an apprentice, he learned by report that the cow-pock, on the hand of milkers, prevented them from having the small-pox; and he very frequently, at his master's, had to dress the hands of such persons. From his inquiries, he satisfied himself that the ulcers he dressed, were derived from the teats of cows. He learned too, that it was very well known among the peasants, in that part of the country, that persons who had these sores upon their hands, could never be made to take small-pox by inoculation. In the further prosecution of his studies, he came up to London; and having returned to the country, and settled there as a surgeon, he commenced a series of inquiries into this matter. He found a very considerable number of persons insusceptible of the small-pox; and, in all these cases, he was assured that the persons had had the cow-pock. The oldest farmers, however, said that the idea was not known in their younger days. Notwithstanding this insusceptibility which he found among so many persons, he met with exceptions; and he found some who had had those sores, and yet afterwards had the small-pox. Some medical men, of whom he made inquiries, believed the fact, and others disbelieved it. He found the difficulty cleared up, in a great measure, by ascertaining that there were several sorts of sores arising from cows' teats, which were communicated to those who milked them; but that there was only one which was the genuine cow-pock. He likewise had to encounter

another obstacle. From the influence of external circumstances, the pock among the cows ceased; and he was unable to make any experiments on the subject. I mentioned, when speaking of contagious diseases in general, that affections, respecting the contagion of which there can be no doubt, will sometimes cease, and sometimes cannot be made to spread;—merely (as it would appear) from certain external circumstances. Now cow-pock, which is only *contagious*, not *infectious*, is said to have ceased for a time; so that it was impossible for Dr. Jenner to get matter with which to make experiments. However, in 1796, the cow-pock broke out in a dairy-maid, whose finger had been scratched. From this finger he vaccinated a boy; and regular cow-pock was produced. He repeated the experiment on another;—taking the virus from the human subject; and he then likewise produced the disease. He mentioned the facts to several of his medical friends; and prepared a document to lay before the Royal Society; but he was advised, in kindness and true friendship, not to expose himself by communicating any such nonsense, merely because it was new. However, he persevered. He did communicate his knowledge to others; and just the same fury was excited among medical men, that had been excited formerly, when inoculation was first made known to them. It was said that it was taking the power out of God's hand; that God gave us the small-pox; and that it was impious to interrupt it by the cow-pock. When I was a boy, I heard people say that it was an irreligious practice; for it was taking the power out of God's hand; forgetting that it is merely *using* that power which God has given to us. Sermons were preached for it, and against it; and hand-bills were stuck about the streets. I recollect seeing it stated in a hand-bill, that a person who was inoculated for the cow-pock, had horns growing in consequence of it. Many were said to have died from mortification, produced by this practice. One of the surgeons at St. Bartholomew's Hospital,—there being no clinical lectures then,—used to give gratuitous lectures against the cow-pock; in which he advised the students not to resort to such a practice. He was interred in London; and, by his direction, a tablet was erected to his memory, on which was inscribed the fact, that he was all his life strongly opposed to *cow-pocking*. His rancour did not cease even with his death. It appears that a great want of candour and of principle was manifested; and that an account was forged, setting forth a number of deaths as having arisen from the disease. After a time, however, all this ceased; and now, I need not say, it is a regularly established practice; although it certainly does not deserve such encomiums as Dr. Jenner supposed it did. It is not an absolute preventive of the disease; but it does prevent it in a large number of cases; and where it does not, it generally makes it much milder. I will not take up more of your time with its details; because if you consult Mr. Moore's "History of Vaccination," (which is almost as amusing as a novel), you will there find every thing that I can tell you respecting it.

VARICELLA.

There is another disease, very much allied to all these; and called "the *little* small-pox," *varicella* (the diminitive of *variola*), or (in common language) the *chichen-pock*, or *swine-pock*. In general requires no treatment; any more than cow-pock.

The chicken-pock is chiefly important, as being liable to be mistaken for small-pox. The affection begins as a vesicular disease; but there are generally some pustules. There are, however, fewer pustules than in small-pox; and, for the most part, they do not amount to more than two hundred. They go through their course, too, with far greater rapidity than small-pox; and there is very little irritation of the system;—frequently none at all. It is sometimes a difficult matter to distinguish between it and small-pox; but when you consider that the disease has far fewer pustules, that it generally runs through its course with great rapidity, and with scarcely any disturbance of the system, there is no great difficulty in making the diagnosis; more especially if you know that the child has had the small-pox before. It is said that, in chicken-pock, there is always cough;—that there never was a case occurred, without being attended by some degree of cough. It is a contagious affection; and there is a little feverishness before the disease takes place; but in about six days the whole is over.

Some have imagined that this disease is only a modification of small-pox;—that it is only a milder form of the disease, called "*modified small-pox*;" but I will not give any opinion on the subject; because I do not think that we have sufficient observations, on these various diseases, to enable us to speak with any degree of certainty. After this disease, I have frequently seen ecthyma and rupia take place; just as after small-pox; and sometimes there have been scars; just as in small-pox. I had the small-pox myself, and was not pitted at all; but the chicken-pock came afterwards, and left several pits; so that the disease occasionally produces pitting, here and there;—the same as small-pox.

Dr. Willan, in his plates, has given some representations of the disease. It occurs in two or three forms; but you generally see very small pustules. It is easily distinguished from small-pox by the disease being, in its genuine character, vesicular. Now and then, however, there are pustules; and now and then there is pretty smart feverishness. The best description of this disease, is contained in Dr. Heberden's "Commentaries." His account is very well worth reading. It is only important to know that there is this disease; because people frequently think that their children are going to have the small-pox, when they are not. If the patient be scarcely ill at all, and has a crop of pustules of this description, you may be almost sure that it is the chicken-pock which is about to occur. There never is, I believe, any internal affection of any consequence, when this disease exists. In very rare cases, there is violent pyrexia, headache, delirium, and even convulsions; but they are all transient.

There is no severe affection of the larynx, of the bronchia, or of the intestines; as there is in many other cutaneous diseases.

ACNE.

Those eruptions of which I next proceed to speak, are not placed by Bateman with *pustular*, but with *tubercular* affections; because there is a considerable hardness of the skin. The fact is, however, that suppuration generally takes place in these affections, if they last long; and I therefore prefer arranging them, with Rayer, as *pustular* diseases. There is only this difference in them;—that there are what may be called slow *chronic* pustules, instead of *acute* ones;—they are *blind*, as people commonly say.

The first of these to which I will allude, is called by Bateman and Willan, *acne* (from *ακμαι, pimples on the face*); and by Rayer, *couperose*. It is a disease exceedingly common, and not at all contagious; nor is there the least harm in it. It occurs particularly in young men and women,—especially the former; and prevents them from being very handsome, about the period when they wish to "look their best." Sometimes the face will continue to be affected with this disease for four or five years. It now and then appears with little black specks, in the midst of rather hard elevations; and then it is called "acne *punctata*" (from "punctum," a point). Sometimes there is very great hardness; and it is thence called "acne *indurata*." In the ordinary form it is called "acne *simplex*;" and is described, by Bateman, as an eruption of small pimples, not very numerous, and without much inflammation;—the surface between the pimples being perfectly healthy; only that there is a little roughness of the face. Now and then it causes the sebaceous follicles to be large and distinct, and marked with a black speck on the top; and then it is called, as I have just said, "acne *punctata*." By squeezing them, you force out what is called a *maggot*; but it is only the contents of the sebaceous follicles; and by repeated squeezing, you may force out this secretion, as long as the follicles will supply it. It occurs almost always in the face. It will take place in the neck; but the face is its usual seat. Many people have a little of this affection; but some have it very severely. There is no occasion to remember the particular names. Sometimes there are black specks; and sometimes there is a good deal of redness around them. Now and then, it occurs with considerable surrounding redness and prominence of the skin; so that you may discover each particular vessel; and from its redness it is then called "acne *rosacea*." You will see this in middle-aged and elderly persons; and in this form the "maggots" lie in a bed of *roses*. This is a very permament complaint. I do not know that it is often got rid of; but, luckily, it does not occur till late in life; and it is taken for granted to be "an outward and visible sign," not "of *spiritual*," but of *spirituous* "graces." Every person is set down for a tippler, who has such a nose as is represented in Willan's sixty-fourth plate.

Each of these hard inflamed pimples of the skin may suppurate.

Some will *subside* after a time; but a great many *suppurate*; and if they do not, it is an instance of termination by resolution; and we ought not the less to call it a *pustular* disease; because, if it pursue its course,—if it be not arrested by something or other,—it goes on to that end. If it is not resolved, suppuration is the termination of it.

There can be no doubt that, when these pimples are small, it is much the best practice to squeeze them, and empty the contents. If this be done, the tubercle will for the most part subside; and of course, if they suppurate, the sooner the matter is let out the better. I am not aware that internal medicine has any effect on the disease; but I have seen great benefit arise from the application of stimulants; and one of the best is the ointment of the nitrate of quicksilver, rubbed well upon the part;—"yellow citrine ointment," as it used to be called.* This stimulates the disease; which seems to be one of inaction. Of course, if it stimulate too much, cold applications should be applied, and the irritation diminished. You sometimes find this ointment too strong; and then it is necessary to dilute it with another;—with simple spermaceti-ointment,—if you please; or with zinc-ointment. Some people give sarsaparilla, and nitric acid, in these complaints; but I do not know that they do any good; nor do I know that "Plummer's pill" is serviceable; but I think I have seen benefit from tar-water. The best local applications, are the stimulating substances that I have now mentioned. I have seen the face swollen all over, when they have been employed; and of course, if any very great inflammation come on, that must be treated in the ordinary way.

SYCOSIS.

This is another disease which occurs in the face; but not so much about the nose, and the parts of the face destitute of hair, as upon those parts which are covered with hair. It takes place, particularly, in the beard of men; and from its appearance when ulcerated, it is called *sycosis* (from συκον, *a fig*). When it occurs on the chin it is called "sycosis *menti*," (from "mentum," *the chin*). If it occur about the margin of the hairy scalp, it is called "sycosis *capillitii*," (from "capillitium," *the scalp*). There is, however, no occasion to make a variety, because it occurs in these different situations. You might as well make varieties of rheumatism, accordingly as it attacks the *shoulders*, or the *knees*.

The tubercles, in this disease, are not as hard as in acne. They continue for a length of time, and are more inclined to suppurate. It makes shaving an unpleasant operation; notwithstanding that you have a good razor, a good strop, good soap, and warm water. These affections are merely slow chronic pustules; and the complaint is exceedingly obstinate. I have not seen the disease much relieved by bleeding, either general or local; or by the exhibition of mercury; but, of course, there are cases where antiphlogistic measures

* Unguentum Hydrargyri Nitralis.

are proper. I have seen it subside from the administration of iron; but, for the most part, all sorts of applications fail. You may apply stimulants; but, after a time, they do no good. Or you may apply cold soothing applications; but, after a time, they also lose their effect.

It is absurd to call these *tubercles*; for there is simply *inflammation*. There is no tubercle;—no organic change in the skin. The gentleman represented in Plate lxv (of Willan), must have regretted having a beard. Acne is a disease of the follicles; and is frequently attended by extreme hardness; whereas sycosis is not so hard. I really do not know what to recommend in the disease. Every one must be left to his own judgment. I have been tired out and out by the treatment. Of course, as this is a disease which occurs in the beard, women are exempt from it; unless their ovaries begin to dry up, and they acquire the character of men; but it does not occur where there is no hair. Both these diseases are confined to the head;—*acne* to the face at large; and *sycosis* to those situations where there is hair. Rayer gives a drawing of both these affections.

BOILS.

The other pustular diseases of which I will speak, are not treated of by Willan and Bateman; but they are all, or nearly all, spoken of by Rayer. One, however, to which I will draw your attention, is not spoken of even by him. Rayer makes a distinct class of those diseases which are disposed to gangrene. Now and then plague is attended by pustules on the skin (*large* ones, indeed;—such as are commonly called *boils*); and there is a great tendency to gangrene. The same occurrence takes place in the disease called *pustule maligne*,—"malignant pustule;" which is generally communicated from brutes. He makes a separate class of these; but they are merely suppurations; and therefore I think that they ought to be classed with the pustular diseases. However, if the suppuration be very considerable (forming not merely *pustules*, but a very large suppuration), it may only lead to confusion to speak of them in that way; and it is to be remembered that they are not merely pustules; but that the *cellular membrane* is chiefly implicated, and the *skin* only *secondarily*. Still, however, as the disease occurs on the surface of the body, it is well to consider it as an affection of the skin.

The most simple affection of this description, is a stye of the eye. A more severe one is a boil in which there is a disposition to gangrene; and another is a carbuncle, in which there is a *strong* disposition to gangrene. These three diseases (not one of which is mentioned by Willan and Bateman) Rayer puts together; and calls them "*boily* diseases;"—diseases characterized by *boils*. A carbuncle is only a large boil; but it is of such an extent, that surgical aid is necessary to let the matter out. He makes another sort, differing only in having a tendency to gangrene. Of this kind are *malignant pustules* (which he includes among the *inflammations gangreneuses*); and the

plague. To these may be added another;—the *glanders* of horses;—a disease which may be communicated to the human subject.

With respect to sties, boils, and carbuncles, I shall say nothing; because they are spoken of in the lectures on surgery. Those of which I shall speak are *malignant pustules*, the *plague*, and *glanders*. As to the plague, it is a disease not confined to the surface; but then, many affections called skin diseases, are not confined to the surface. Such is the case with small-pox. It is a general affection of the system; and involves the skin among other parts. The characteristic of these suppurations is a disposition to gangrene. In respect to all these diseases, whether *small* ones (such as sties and boils), or *great* ones (such as malignant pustules and the plague), they bear the same relation to porrigo and bullæ, that the latter do to the small vesicles of herpes. I said that I thought it wrong to separate them; and so with respect to these, I think it a pity to make different classes merely on account of their size. Because small-pox and porrigo have *small* suppurations, and plague or carbuncle is characterized by a suppuration of *large* extent,—more magnified, it is no ground for constituting a different class of diseases. You will recollect that they are merely *pustular* diseases, with suppurations on a *large scale*.

THE PLAGUE.

The plague is very similar to typhus and continued fever; but it so affects the surface of the body, that I have thought it well to speak of it among diseases of the skin, as Rayer has done. It is, like many other diseases of the skin, an acute fever;—as is the case with small-pox, for example. It is an acute fever; attended by headache, delirium, and a burning sensation at the epigastrium. Perhaps there may be great strength of body at first;—the person may be of a full phlogistic diathesis; but great debility soon comes on; and very often there is debility from the first. Glandular swellings speedily appear in the arm-pits and groins, so that the disease is characterized by buboes; but the glands of the groins are more frequently affected, than those of the arm-pits. Sometimes these glandular swellings, or buboes, come on at the first; and sometimes not till towards the end of the complaint. Besides them, however, there are upon the surface vesicles of all sizes; the contents of which are frequently dark. There are upon the surface, boils, carbuncles, and vesicles; and between them, and even where they do not exist, there are often vibices, petechiæ, and ecchymoses. These petechiæ, it is said, will sometimes rise into carbuncles;—where at first there was merely a little effusion or congestion of blood, there will sometimes, at last, be carbuncles. Occasionally, there is not sufficient power of the constitution,—not sufficient strength of inflammation, for carbuncles and buboes to arise. Just as in the case of the violent application of malaria, or the violent application of the poison of typhus fever, and also as in cholera, persons will sometimes die immediately, without any reaction taking place.

The plague usually destroys life in from two to five days; but if

a person survive the fifth day, recovery is generally expected. Most people who are seized with this disease die; even though they enjoy every advantage of treatment and comfort. It is said that the disease may be had more than once.

Some consider it a very ancient disease. The symptoms are mentioned by Hippocrates; and Dr. Bancroft contends that the disease is mentioned in the Bible; and that this was the affection under which the Philistines laboured, when they are said to have been smitten in the private parts, after taking away the ark. He says that the disease spread as they carried about the ark;—that it was a contagious disease; and the more they carried about the ark, the more the disease was communicated; till at last it spread from Ashdod to Ekron.* He considers that the Philistines probably received the disease from Egypt. Some consider, that, as the Philistines were smitten in the hinder parts, they were afflicted with piles; but Dr. Bancroft contends that piles would not have killed them, in the way in which they perished.† However, I think there is this objection to Dr. Bancroft's argument that it was the plague. If you read the book of Psalms, (and people ought to read it, and all other parts of the Bible), you will there find it said, that they were not only smitten in the hinder parts, but were put to a *perpetual* shame.‡ This intimates a chronic disease was left; but the plague would not have left a chronic disease of that description. It is stated that from fifty to seventy thousand persons were smitten by the disease. But whether Dr. Bancroft be right or wrong, the symptoms were distinctly mentioned by Hippocrates. It is a disease that is almost always prevailing in the Mediterranean, at Constantinople, at Venice, and all the various ports of that sea. It has likewise prevailed at Marseilles, Moscow, and London.

There can be no doubt whatever of its being a contagious disease; but it is rarely communicated without contact. It is, for the most part, believed to be a *contagious* disease, in the strict sense of the word;—not *infectious*. One of the latest writers upon it (Mr. Madden, a surgeon) says, that if there be a deficiency of ventilation and cleanliness, so that the emanations from the patient are very much concentrated, it may be communicated by infection; but if there be any ventilation at all, then it can only be communicated by contact with the individual, or with something that he has touched. Some have denied, of course, that this disease is contagious; but

* "They carried the ark of the God of Israel about. And it was so that, after they had carried it about, the hand of the Lord was against the city, with a very great destruction. And He smote the men of the city, both small and great; and they had emerods in their secret parts." 1 Samuel V. 8 and 9.

† "There was a deadly destruction throughout all the city. The hand of God was very heavy there." (1 Samuel V. 11.) The disease which proved *fatal*, however, would appear to have been something distinct from the emerods; for we are told, in the sixth verse, that "He destroyed them, *and* smote them with emerods;" and, in the twelfth, that "the men that died *not* were smitten with the emerods."

‡ "He smote his enemies in the hinder part; he put them to a perpetual reproach." Psalm LXXVIII. 66.

there are proofs without end that it is. When the French army were in Egypt, about eighty medical officers died of it in one year. The next year they employed Turkish barbers to dress the patients, and bleed them; and then only twelve medical officers died; but one-half the barbers died. However, it was a very good change. It is said that at Moscow, in 1771, all the assistant-surgeons, amounting to fifteen, were seized with it, and of these three died; but the physicians, who did nothing but walk through the wards with a pen in their hands, generally escaped. The assistant-surgeons were here reduced to the same state as the barbers. At Marseilles there had been no plague for fifty years, till 1720; when an infected vessel arrived. The disease, at that time, was distinctly traced to the arrival of an individual from an infected spot; and half the inhabitants died, in a short period after the arrival of the infected vessel. It is said that the plague had not been known at Moscow, for one hundred and fifty years, till they had war with the Turks; when two soldiers from an infected place arrived, and died; after which, eighty thousand perished from the disease in the city, and twenty thousand in the neighbouring villages. It is said that the plague had not been known in Malta, for one hundred and thirty-seven years previously to 1813; and then the disease was brought from Alexandria. Howard says that the plague of London, which occurred in 1665, was conveyed to a village in the Peak of Derbyshire, by means of some old clothes. He was so astonished at the absurdity of many medical men, in denying that it was contagious, that he writes as follows:—"Have not some of our professors sullied their names with the dangerous doctrine of the non-contagion of the plague? From no other cause than the error of the physicians, who constantly maintained that the disease then epidemic was not contagious, happened that terrible visitation which, in 1743, ravaged the city of Massina and its vicinity, with the loss of above forty-three thousand individuals, in the short space of three months." If you look into most writers, you will find that persons who attended others labouring under the disease suffered, while those who ran away escaped it. The Turks are so satisfied of its being contagious, that when the disease prevails they shut themselves up; and the Pacha holds communication with no person whatever. I think there can be no doubt of the plague being contagious, in the strict sense of that word.

It is remarkable that great heat and great cold will stop the plague. It is a disease that will not bear great heat; so that it has never been known to occur in tropical climates; and when the heat rises to a certain point, it stops. This takes place in Egypt about the twenty-fourth of June; and as that is the nativity of John the Baptist, he has the credit of putting a stop to the plague. The Catholics ascribe it all to him. From the intense heats, it is said never to appear in Upper Egypt; and it ceases altogether as the hot weather comes in. The winter also causes a cessation of it; and frequently renders exposure to a person labouring under it, perfectly harmless. From its being so contagious a disease, Dr. Wells considered that it was owing

to quarantine laws, that we are not now troubled with this pestilence. He says that many persons ascribe our exemption from the disease to the fire of London; but he contends that the plague has not been known in London, since 1665; whereas the fire did not take place till 1666. He says that the fire of London consumed only one-fifth of the town; leaving untouched the Borough, Wapping, Whitechapel, Clerkenwell, St. Giles's, and the purlieus of Smithfield; which were among the dirtiest places. He says, secondly, that Bristol has escaped for the same length of time as London, and yet there has been no fire in that city; and the improvements there began much later than in London. He says the Dutch are as cleanly as we are; and yet the plague continued there forty years longer than in England. Next he instances the town of Cracow as a very dirty place; and yet there has been no plague there for a century. Fourthly, he says that ague alarmingly increased, and returned eleven years after the fire; and that dysentery continued till the end of the century, notwithstanding the improvements; and therefore he argues, *à fortiori*, that as they could not prevent *dysentery*, they could not prevent the *plague*. Fifthly, he says that the plague is not known in India, China, and North America; where, in many places, they are filthy in the extreme. Sixthly, he says the plague began first among the poor, who associated with the sailors of infected vessels. But he contends that, from the time the quarantine laws were established, the plague has been unknown in England; and that from the considerations I have now stated, the circumstance could not arise from the increased cleanliness, and general improvement of London; but from a strict adherence to quarantine laws.

I need not repeat to you some facts, which I mentioned when speaking of contagion, to shew that this disease was contagious. Dr. White, I told you, inoculated himself and died. You will find similar instances given in Dr. Heberden's "Medical Commentaries." When the poison has been applied, the disease generally appears in from three to five days. It is said that the disease is rarely caught from a dead body. When speaking of the innocuous agency of putrified animal matter, I mentioned the statement of Howard, that persons did not suffer from the stench of the putrifying dead bodies, of persons who had perished of the plague. I believe persons may touch the dead bodies, without fear of catching the disease; but touching their *clothes* is another thing. It is said by Dr. Bancroft, that the Turks employed by the French to bury the dead, all escaped, with the exception of one individual. Howard says that, in Turkey, people are not afraid to handle the dead bodies.

As to the treatment of the disease, I believe that one-half of those who have it perish; and therefore you may suppose that the treatment is not very successful. But we are told that the treatment must be conducted on the same principles as in common fever. If there be a phlogistic diathesis, active bleeding, cold affusion, and calomel, are recommended; but, on the other hand, when there is debility, we must exhibit wine, quinine, ammonia, and (if Dr. Stevens

be correct) the neutral salts in great abundance. Of course those who follow one exclusive rule of practice, will kill a great many. Those who always bleed, will destroy a great number; and those who always give brandy, will do the same. But Mr. Madden has compared the two modes of treatment. He says that, where bleeding has been had recourse to, the mortality has generally been very great; but where he gave strong brandy and water, and induced a copious perspiration, his success was very great. He also gave enemas of the same ingredients;—that is to say, hot brandy and water; he sponged the body with vinegar and water; soaked the head with vinegar; had hot poultices put on the buboes, till they gave pain; and cut into the carbuncles to arrest the mortification; and by this local and general treatment he was so far successful, as to save seventy-five patients out of a hundred. I should suppose that the period for a lowering plan, in this disease, was very short; and that stimulating treatment was preferable. The best antiphlogistic treatment would be, not to evacuate blood, but to apply cold water, and purge. From the accounts I have seen, I should think that active depletion would be very dangerous. The moment softness of the pulse was perceived, I should imagine that the treatment mentioned by Mr. Madden would be very proper.

MALIGNANT PUSTULE.

The two inflammatory and pustular diseases, of which I have next to speak, are two; and both are derived from brutes. The first is what is called by some writers the *malignant pustule*; by the French it is called *pustule maligne*; and I rather think it is this disease (though I am not sure of it) that is called by the Germans *milz-brand.*

In this affection there is a carbuncle produced, very similar to the carbuncle of plague. I do not imagine that the disease is by any means well understood; but its existence is an undoubted fact. When animals have died of a particular disease, in which there are pustules tending to gangrene, it has occasionally happened, that the individuals who have skinned them, have had carbuncular pustules, of a dark colour, take place on the surface, and have perished from them. It is said occasionally to have arisen from persons having merely touched the blood of an animal, which was killed while labouring under this disease. Indeed, one instance is recorded of a butcher being seized with a gangrenous inflammation in the face, and speedily dying, after having put between his lips a knife, with which he had killed a bullock labouring under this disease. Some suppose that disease of this description (a carbuncle tending to gangrene, and bearing a resemblance to the carbuncle of plague) is never produced but by the contact of the blood, or the secretions, or the body, of a brute which has died of this disease; or of something which the body has touched; but Rayer considers that, now and then, it occurs simultaneously and sporadically. However, I should hardly think that he is correct. It is possible that the person may

have touched something, which had been in contact with the animal previously to its having its skin taken off. The animal may have been sent to market, and contact is possible (just like the infection of scarlet fever and small-pox) without our being able to trace it.

I never saw an instance of this disease. I believe that, in general, it is not *infectious*; but merely *contagious*. It has been described by Morand (a French surgeon) in the History of the French Royal Academy, for 1766. He there gives cases of butchers and others, who have been affected with gangrenous erysipelas, and carbuncles. He thinks it can arise, even without an abrasion of the surface, if the blood of the animal be applied. Enaux and Chaussier described the "pustule maligne," in their work on the Treatment of Bites, published in 1755;—that subject being followed by a short account of malignant pustles. Two instances are mentioned in Hufeland's Journal, for 1822, of diseases of this description, which proved fatal to two men. They had been wetted, in the performance of venesection, with the blood of a cow labouring under the disease. In each case the chief inflammation found after death was peritoneal; and also they had buboes.

The pustules, or carbuncles, of this disease, have generally been observed among veterinary surgeons, shepherds, tanners, blacksmiths, butchers, and labourers;—in fact, among all those persons who were most likely to come in contact with brutes labouring under the affection. It is said usually to display itself on those parts of the body which are uncovered; such as the face, neck, hands, shoulders, or arms;—all those parts being uncovered in many descriptions of work. There is an account of many people being seized with a disease in 1818, at Ostiano, in Italy. Thirty-five persons visited an ill-ventilated stable, which contained three cows and ten horses; one of which had laboured under an offensive discharge from the nostrils, for twelve months. Eleven of them were seized with the disease; and all but one died. Violent pyrexia, pains, spasms, boils, and at last a large carbuncle, characterized the first stage; gangrenous vesicles, and a typhoid fever, were the chief features of the second. Whether this was the same disease I do not know; but if so, it would appear that where there is a want of ventilation, and many animals are crowded together, it may be infectious. You will find in Rayer an account of the disease. It is at present rather an object of curiosity, than of practice; for I believe that no treatment does good. Some persons, however, recommend the application of the actual cautery to the carbuncles, as soon as they appear. It is supposed, by Rayer, to bear a very great resemblance to the plague in human beings; but it is very likely, notwithstanding, to be a different disease.

GLANDERS.

The next disease is glanders. You are aware that this is a disease of horses; and that it is chiefly characterized (or very much so) by a profuse discharge from the nostrils. It occurs in two forms; the

one *acute*, and the other *chronic*. When it occurs in the acute form, there is violent inflammation of the face of the animal; and gangrene very soon supervenes. In the chronic form, there is little more than a discharge from the nostrils; and the animal will continue to labour under this for a great length of time. In general, I believe, the disease is not susceptible of cure. Some persons now say that they can cure it; but at any rate, up to the present time, it has been considered an incurable disease. It is a highly *contagious*, but (I believe) not an *infectious* disease. I believe no horse ever gets it, unless the matter from another horse comes in contact, either with an abraded portion of the surface of the body, or with the mucous membrane of the nostrils; and some say not even then, unless the mucous membrane is abraded. That, however, I cannot determine.

The disease sometimes appears in another form; and then, instead of being called *glanders*, it is denominated *farcy*. I do not know that I am quite right in dwelling on these matters, especially as I am not conversant with them; but as the disease may occur in the human subject, (for I have seen two cases myself), I think the glanders ought to be enrolled among diseases of the skin. When the affection assumes the form called *farcy*, there are small tumours (which farriers call *buds*) or small ulcers, about the legs; and sometimes on the lips, face, neck, or other parts of the body. Sometimes these are so small, so few in number, and create so little inconvenience to the animal, that for a time they escape observation. At other times they are larger, more numerous, and painful to the touch; and spread more rapidly; and in these instances a general swelling of the limb often takes place, particularly when the *hind* legs are attacked; and some degree of lameness ensues. These tumors or buds are at first hard; but soon become soft, and burst; —degenerating into foul ulcers of a peculiar appearance. The lines of communication between the buds, or ulcers, are generally very observable; and consist of what the farriers call *corded veins*; but, in general, I believe they are enlarged lymphatic vessels, running from one ulcer to another. I believe the term "*glanders*" is derived from a gland under the jaw, which is supposed to be the seat of the disease. I do not know the origin of the term "*farcy*." However, when glanders and farcy occur in horses, they are the same disease; for Mr. Colman says that he has inoculated a horse with the matter from farcy, and it has produced glanders; and *vice versâ*.

The disease has appeared in the human subject in both forms;— farcy and glanders; and it has also appeared both in the chronic and acute character; but the chronic, I believe, has been noticed more frequently than the acute. In the chronic form, there has been no tumor produced on the body; but in other cases, tumors have arisen in succession, and have suppurated; and the patients have most of them died, at last, completely worn out. I believe, in one or two cases, patients have got better. You will find three cases mentioned in Mr. Travers's work on Constitutional Irritation; and though he does not seem to have been aware that they were glanders,

yet it is proved that two of them were; for Mr. Colman took matter from the patients, and inoculated two asses; and they were seized with acute glanders. Mortification and sloughing took place; and both of them perished. I will read one of these cases as related by Mr. Travers:—"Nimrod Lambert, a healthy hackney coachman, aged thirty-two, in January 1822, infected a chap on the inside of the right thumb, by inserting it into the nostril of a glandered horse, to pull off a scab. He remembered to have afterwards wiped the thumb with a wisp of hay. In the space of six hours, he was seized with violent pain and swelling of the thumb. It inflamed rapidly; upon which he applied a poultice to it, and took some salts. On the third day he was suddenly taken ill, whilst driving, with cold shivers and giddiness; and states that he entirely lost the use of his limbs for seven hours. At this time his arm pained him much all the way up; and on the following day it was streaked with red lines, and excessively swollen; the arm-pit was also much swollen and tender. In the evening of the fourth day, he was carried to Guy's Hospital; where he lay during twenty-four weeks. Superficial collections of matter formed, successively, in the course of the absorbents. The corresponding portions of the integument sloughed; leaving extensive ulcers, which discharged an unhealthy and fœtid matter. The glands at either angle of the lower jaw, and those of the groin, became swollen; and he was much afflicted with pain between the eyes, and down the nose, and exulcerations of the membrana narium, attended with discharge. During the progress of the local disease, he had much constitutional illness. He totally lost his appetite, and was oppressed with nausea; complained of severe pains, with swimming in the head;"—and so on. An ass was inoculated by Mr. Sewell with the matter of this man's sores, and died glandered. This was proof positive of the nature of the disease. The termination of the case is not given; but the patient considered his constitution broken, and despaired of ever being again the man he once was.

Another case is mentioned in the same book, which happened to a veterinary student, who slightly injured his hand in examining the head of an ass, which had died of inoculated glanders. An ulcer ensued; and pain and inflammation of the superficial absorbents took place in a few days; but soon ceased. The absorbents of the opposite arm, however, became affected; and an abscess formed in it, and another at the lower part of the back. He became hectic; and at length suppuration occurred also in the lungs, in one of the kidneys, and successively in each knee-joint; after which he died. Now this might have been a mere inflammation of the veins and absorbents; but Mr. Colman inoculated an ass over the maxillary gland, and at the margin of the nostrils, with the matter of the abscess of the arm; and likewise rubbed some upon the Schneiderian membrane. Glanders and farcy were the result; and the animal died, on the twelfth day of the experiment. Precisely the same was done with another ass, by the patient's brother; but no effect ensued; as the matter was not employed for several days, and had

been left exposed to the air. He repeated the experiment, however, upon the same animal, with fresh matter; and it perished of glanders and farcy, on the fourteenth day.

The possibility of the disease occurring in the human subject, is certain; but all these facts I was perfectly ignorant of, when a man was brought to St. Thomas's Hospital, with some inflammation on one of his cheeks, and gangrene of one side of his nose. He had been perfectly well, excepting some common ailment, which he had experienced a day or two before. Small pustules were forming around his nose, and upon his cheeks; his face was very much swollen; one eye was nearly closed, and the other completely so; and he was a little delirious. There were soft tumors on different parts of the extremities; and, I think, on the trunk. They were red and hot; and I saw that there was evidently fluid. There was a profuse discharge, as in horses, from one nostril;—I think only from one; but, at any rate, infinitely more from one than from the other; and that was the right nostril. The pustules on the face were phlyzacious;—large well fed pustules, with a hard base. They existed on, and around the nose, but principally on the right side; where the gangrene, and also the discharge from the nostrils, took place. The parts which were red were hot, dry, and shining; but the nose was dark-coloured; and, on its right half, black, cold, and senseless. He died before twenty hours had passed. With respect to the treatment, it was inefficacious. He was bled;—for his pulse seemed to justify bleeding; and the blood was buffed. The preceding history of the case is this:—Twelve days previously, he was attacked by pain in the right hypochondrium; for which he took ten grains of Pilula Hydrargyri; and the next day felt quite well. Five days before his admission, a pimple appeared upon the right side of his nose; and while this increased and suppurated, the surrounding parts swelled and grew red; and the state of things became such as I have described. Five weeks before his admission, he had gonorrhæa, for which he had taken mercury; but the affection for which he was brought to the hospital, began only five days before his admission.

The nature of the disease was a perfect mystery. Some called it one thing; and some another. I did not venture to give it a name; never having seen any thing of the kind before, nor read of such a case. This occurrence took place in March; and the patient was under the care of Dr. Roots; and it so happened that, on the following June, I found a young man lying in one of my beds, who had been brought in an hour before, in precisely the same state. The nose and surrounding parts were exceedingly swollen; so that the left eye was closed completely, and the right nearly. The tumefied parts were hot, and of a bright red, with the exception of an inch of the left half of the nose; which was of a mulberry-colour;—precisely the same state of things, that occurred in the other young man. A profusion of deep-yellow tenacious mucus, with a few streaks of blood, exuded from each nostril; but particularly from

the left. Several hard phlyzacious pustules existed on the nose and adjacent parts; as well as on the arms, thighs, and legs; and each was surrounded, in the latter situation, by a blush of red. A patch of the same colour was observed on the left elbow. His pulse did not justify bleeding; it was rather an undulation than a pulsation. I ordered him beef-tea, wine, and sulphate of quinine; but he was dead in a few hours. A drawing was made of each patient.* That of Dr. Roots's was executed by Mr. Solly,† apprentice to Mr. Travers; and the other (which contains two representations;—the one *before*, and the other *after* death) by Mr. Alcock. The nature of the disease not being suspected, no experiments were made; or we might have inoculated an ass (which is much cheaper than a horse). An ass will sometimes serve the purpose of a better animal; and as it is as easily affected as a horse, of course I should have preferred it for making the experiment.

This disease is not described by either Willan or Rayer;—the knowledge of its occurrence in the human subject, being quite new. Each of these patients was opened; but not very satisfactorily. The father of each boy was present at the time; and forbad us doing any thing which would disfigure the head; so that the Schneiderian membrane could not be examined throughout. We were not allowed to cut the arms and legs, to see if there were tubercles down on the periosteum. It is found, in horses, that tubercles are formed deeply seated in various parts of the body. The disease would have remained a mystery to me, only that I was satisfied it was a specific eruptive fever, depending on some specific cause. So far I went, and no farther; till I was shewn, some little time afterwards, a case in the "Medical Gazette," headed "Fatal Case of Acute Glanders in the Human Subject;" and I found that the case was precisely one of the description I have mentioned. It is described by Mr. Brown; a surgeon in the second regiment of dragoons. The man was seized, on the night of the sixteenth of April, with rigors, headache, and slight irritability of the stomach;—all the symptoms which usher in an eruptive fever. However, he had great pains and stiffness of all the large joints; and these increased to an alarming degree. The left shoulder was rather swollen, though not inflamed; but the tumefaction became considerable, and of a livid hue. Similar swellings, but smaller, took place on the arms, legs, thighs, and sacrum; —exactly as in these cases in the hospital. The tumors were insensible and hard; but in the cases in the hospital, the tumors were soft. They were of a chocolate-colour; but acquired a deep vermilion hue, and soon became of a dark brown. One appeared upon the left temple; and the eye-lids became tumefied. The right nostril was gummed up with an inspissated discharge. The posterior fauces

* They were exhibited.

† A gentleman who has been long known and esteemed, as a diligent teacher, by the students frequenting the Hospital; but who has recently established a claim to a high station among the cultivators of Pathological Anatomy, by his able and accurate work on the brain.

were much inflamed, and nearly of a purple hue. Several watery pustules (which I have termed phlyzacious) rose above the skin, in various situations around each of the tumefications;—exactly as I have shewn you in the drawings. A perfect examination was obtained here;—and a cluster of tubercles was found in the cellular membrane exterior to the pericranium of the left superciliary ridge; and in the right frontal sinus;—exactly similar (according to the veterinary surgeon of the regiment) to those observed in the frontal and other sinuses of the horse, after acute glanders. On dividing the various livid tumors down to the bone, the muscles appeared perfectly decomposed, and of a dark livid colour; and under each was a cluster of grey circular tubercles. The existence of these tubercles is so common in the glanders of horses, that one French writer takes this for a tubercular disease; and it is described under that name in a French Veterinary Dictionary. The army-surgeon adds,—"It appeared that the patient had had, for some time, the sole charge of a glandered horse, which had been destroyed on the very evening of his attack; and that he had skinned him; and exerted himself a good deal, in cutting up and burying the carcase. But these circumstances did not at first create the least suspicion; and his complaint was considered a very severe case of acute rheumatism; and was treated as such."

I saw that the two cases in St. Thomas's Hospital were similar; and must have been glanders; and the difficulty was to ascertain, whether the parties had had any communication with glandered horses. I had a great deal of trouble in endeavouring to ascertain the fact; and I could not prove it at last; but I found that these men (although in an occupation that one would suppose would never lead them near horses) had actually been in the neighbourhood of glandered horses. Further than that I could not prove; but it is a very singular circumstance, that this was satisfactorily proved. I found, with respect to my own patient, that he was a whitesmith, at Lambeth. I went there, and inquired whether he had had any thing to do with horses;—taking it for granted that, as a smith, he had. They told me that he had never been near horses;—that he was a *white*-smith. However, I went to the workshop, and found it situated in a mews. I then asked if there had been a glandered horse in the mews; to which the father replied,—"No"; but one of the men immediately said,—"Why, don't you recollect there was a glandered horse in the stable, for six weeks, just next the corner where Tom used to work?" He then shewed me that the boards which separated the stable from the whitesmith's shop, were so defective, that the discharge from the animal's nostrils had come through; and occasioned so great a stench, that the young man frequently said he should not be able to work, unless the horse were taken away. I learned, that when this horse was being led to the knacker's, about a month before the commencement of this disease, it fell down exhausted at the door of the forge; and that he went and patted it about the head as it lay; and took hold of the head

while the rest endeavoured to make the animal rise. I also found that he had a number of pimples on his face, which were raw; and his father said he recollected that his son had got a habit of wiping his nose with the back of his hand. So far I went; and though this is not proof, yet these are singular facts.

With respect to the man that came first to St. Thomas's, he was a tailor; and tailors not being famous for horsemanship, I almost despaired of being able to trace any connexion between him and a horse;—had it been a *goose*, there would have been no trouble about the case. I had to go to Woolwich; and at last I found that the next-door neighbour of the man to whom this lad was apprenticed, had had a worn-out pony; and kept it in a filthy wretched shed, opposite the two houses. I ascertained that the animal had the glanders, and was afterwards killed on this account; that this youth was in the habit of harnessing it, and getting into a little cart which it dragged, to have a ride. Nothing is more likely than that he had brought some of the matter from this horse in contact with him.

It so happened that, among the different persons to whom I mentioned these cases, was a general practitioner at Clapham. About a fortnight or a month afterwards, he told me of a case which he thought was of the same description. A young man (a pupil of the Veterinary College, and the son of a veterinary surgeon at Clapham) had been seized with a very severe acute affection of the knee-joint (apparently rheumatic); and with severe pains;—just like the other cases. He proposed that I should see the patient; but the father put it off till the next day, and in the interim the son died. Before death there was a copious sero-mucous discharge, occasionally a little bloody, from the eyes and nose; the Schneiderian membrane was excessively red and nearly excoriated; and the eyes were closed. A pretty abundant eruption, very similar to small-pox (that is, phlyzacious pustules), but larger and hard, appeared in different parts; but particularly the neck. There was scarcely any sleep; but occasionally delirium, and at length convulsions; and the patient died. Unhealthy pus was found in the absorbents of the arm; and the bursa of the knee contained a large quantity of pus, with flakes of coagulable lymph. He appeared to have had under his care, at Clapham, a horse affected with the farcy;—I suppose he meant *glanders*. The ring-finger of the right hand, and the absorbents and axillary glands, became all at once inflamed and painful; but whether after any wound or abrasion, could not be satisfactorily ascertained. The finger suppurated and was opened; and, a few days afterwards, he was seized with headache and pains in his limbs; which pains were considered rheumatic. There were afterwards pimples on the face; and a profuse discharge from the Schneiderian membrane. No experiment was made in this case; but as experiments were made by Mr. Colman, and the brother of another veterinary pupil who perished of this disease, there can be no doubt (whether *this* was a case of glanders or *not*) that the disease does occur in the human subject. You will find a paper of mine on this

subject, in the sixteenth volume of the "Medico-Chirurgical Transactions." Unfortunately the Society would not publish the drawings; and therefore the cases are not so interesting as they would have been.

The foregoing are all the pustular diseases of the skin. It is true, some persons give that name to those produced by a blister or a tight shoe, and to those which are brought out by tartar emetic ointment; but there is no occasion for me to say any thing of them. This, therefore, concludes all that I think it necessary to say on *inflammatory* diseases of the skin.

PURPURA.

I will now speak of those affections which consist in extreme *congestion* of the skin without any inflammation; and of this description are petechiæ, vibices, and ecchymoses. There is a particular disease in which spots appear on the skin;—*petechiæ* (*small* spots), *vibices* (*large* spots), and *ecchymoses* (extravasations), which occur throughout the body, on the conjunctiva, and even within the mouth, and in the interior of the body; so that the blood will actually be poured forth on the various viscera. This disease is called at present, in this country, *purpura* (from πορφυρα, *a shell of a purple colour*). It was formerly called *petechiæ sine febre*, or *hæmorrhagia petechialis*. It bears a great affinity to scurvy, and some fancy it is the same disease; but I cannot subscribe to that opinion. It is a disease that frequently happens without any constitutional affection. I have seen persons going about with it, and yet quite well in other respects; and in other cases, persons have died *with* it. There is no affection of the limbs, and no sponginess of the gums, as is the case in scurvy. The disease, too, has often arisen without any evident cause; whereas scurvy (I believe) never takes place, except from a deficiency of proper food.

If the disease occur merely on the surface of the body, forming patches, it is called "purpura *simplex*." But frequently there is a bleeding from the mucous surfaces; bleeding from the mouth, from the stomach, and from the intestines. I once had a patient, who died from bleeding within the head (apoplexy); and a clot of blood, which had oozed from the vessels of the pia mater, was found under the arachnoid membrane. Sometimes the spots are large; and sometimes there is ecchymosis. There is no inflammation or tenderness of the particular parts. It appears to be a mere congestion of blood. Rayer has very properly, I think, separated it from inflammatory diseases, and has placed it in the order *congesta*. It is a very singular disease. I have no idea of its nature; I cannot comprehend its pathology. You will frequently see the white of the eye spotted; and the same circumstance occurs within the mouth. The discharges of blood from the mucous surfaces, are sometimes very great. It is a disease, too, which occurs under the most opposite circumstances;—occasionally with great debility, weakness of pulse, exhaustion; and sometimes with the most inflammatory state of the system; so that if

you take away blood, it is buffed and cupped; and the patient is greatly relieved, and most probably gets well. In other cases, such treatment would be death. You frequently see similar patches on the stomach and liver. In severe cases, the patient is pale; he looks as if he were in a state of anæmia; and I dare say the blood is deficient in quantity. On the other hand, I have seen children with many hundreds of these spots upon them; and yet running about perfectly well. Sometimes there would appear to be a little inflammation connected with this congestion. It is sometimes attended with great tingling, and even little wheals; and it is then called "purpura *urticans*;" to shew that it bears some affinity to urticaria. You will frequently see (though it is not this disease) such tenderness of the vessels in old people, that if they rest upon their arm, or knock their hand against a door, so as to produce the slightest bruise, ecchymosis will take place; and that has been called "purpura *senilis*." It conveys the idea that it is the same disease; but it is merely such a tenderness of the vessels, that the slightest contusion produces ecchymosis. A person may have the disease for many years, at the latter part of their life; and yet be perfectly well. You will often be consulted by patients on this occurrence; and it is right to know that it is *ecchymosis*, and should not be called *purpura*. It is merely a bruise; and may be produced on old persons with the greatest facility.

You know that petechiæ take place under many circumstances;—frequently in typhus fever; frequently in small-pox, between the pustules; and sometimes in scarlet fever. It is very common to meet with them in dropsy, where there is great debility; they very often occur where there is extreme dyspnœa; and sometimes in phthisis, where there is extreme difficulty of breathing. But there may be such debility of the vessels, that the blood oozes forth,—they allow it to escape. Or there may be an impediment to the return of the blood; and the blood may be *forced* out. Frequently, however, no reason can be assigned for the disease. The person may be living as usual; when, all at once, the disease makes its appearance. The pathology is to me a perfect mystery. It was at one time supposed, that this disease always occurred with extreme *debility*; and that the proper treatment for it was wine and brandy, good nourishment, opium, and bark. But there is no doubt whatever, that there is frequently an *inflammatory* state. Although the *skin* is not in a state of inflammation,—although these *spots* are not inflammatory, yet the *system* is in an inflammatory state; as is proved by the buffy and cupped state of the blood.

With regard to the mode of treatment, I do not think there is any satisfactory or universal way of conducting it; but you must treat it according to the particular circumstances in each case. In mild cases, moderate bleeding, or mere purging, answers very well; and I think I have satisfied myself that purging with *colchicum*, answers better than other things. I have made observations upon this medicine, in other cases. I have purged with colchicum, and with

other things; and the difference has been very greatly in favour of colchicum. I am sure you will get rid of this disease sooner, if you purge with colchicum, than if you use any other means. Where there is strength of pulse, it is necessary to bleed, and bleed freely. I have seen patients lose two or three pints, in a few days, with great relief; and they have got well. A great number of cases are of this inflammatory nature; but by no means all. Others are of a different description; and wine, bark, and good nourishment, must be given. I recollect a case (which occurred in a child) where there was merely moderate debility; and the child was out every day. The disease was not intense, but these petechiæ existed; and under good nourishment and tonics the patient got well. But in extreme cases, it is necessary to do more than this. It is necessary to give wine and opium; and to treat the patient as you would, if he were sinking under typhus fever, or confluent small-pox, with typhoid symptoms. Where there is hæmorrhage, I have no doubt it would be best treated by oil of turpentine. As it restrains hæmorrhage from the alimentary canal, better than any other medicine, I have no doubt it would restrain it under this particular affection. One of the most severe, and most successfully treated cases that I ever saw, was at St. Thomas's Hospital, under the care of Dr. Roots. There were petechiæ, vibices, and ecchymoses, in every part of the body; together with great congestion of the liver; so that the right hypochondrium was distended. Blood was also poured forth from different cavities. The patient was bled, and took oil of turpentine; and he got well rapidly. Every one who saw him, must have supposed that he was near death. I was much disappointed in a case of my own, which I treated in the same way. Apoplectic symptoms came on; and on opening the patient a clot of blood was found on the brain.

DISCOLOURATIONS.

Before I proceed to those affections which are of a structural nature, I may perhaps say a few words on those diseases which consist in a discolouration of the skin. Some of these are really not affections of the skin itself. For instance, in jaundice the skin is yellow; in chlorosis the skin is exceedingly pale; and likewise in anæmia. On other occasions, however, the skin is itself discoloured; and among these affections are mentioned sun-spots; and that blackness or blueness of the surface, which is induced by the continued exhibition of nitrate of silver.

LUPUS.

The *organic* affections of the skin are, for the most part, of a tubercular nature. They are lupus (or *noli me tangere*) cancer and elephantiasis. Lupus,—so called from its resemblance to a *wolf* (lupus) in the ravages which it makes,—is a disease more frequently treated by the surgeon, than by the physician; and is an affection that is particularly seen upon the face, around the nose, and upon the upper lip. It is exceedingly intractable. There is a kind

which occurs in scrofulous children, which will frequently give way, perhaps spontaneously; and also will yield sometimes to one application, and sometimes to another. But there is another description which produces deep ulceration and extreme pain; and frequently appears to be somewhat allied to cancer. This is called *noli me tangere*; from its generally becoming worse, if interfered with by medical men.

Lupus is characterised by tubera; which are rather oval, and frequently flat; and of a brownish red or livid colour. They increase and terminate in ulceration; and an ichorous discharge is then poured out, and concretes into crusts. It appears on the nose and cheeks, and sometimes upon the ears and chin; but it is calculated that, eight times out of ten, it attacks the nose. The parts around become harder and harder; suppuration goes on to ulceration; till, at last, a great degree of destruction is produced. Some cases have been cured, it is said, by the application of caustics, and particularly arsenic; but there is no rule for the treatment; and I believe, in a great number of cases, the disease resists all means.

CANCER.

With respect to this disease of the skin, I need say nothing; because I have already spoken of it, when treating of structural diseases at large. The particular treatment of cancer, comes into the department of the surgeon.

ELEPHANTIASIS.

The next disease, of which I will speak briefly, is one of very rare occurrence in this country; so that I have seen only two or three instances of it. I refer to *elephantiasis*. It receives its name from the skin becoming as rough and hard as the back of an elephant. It has been termed "the elephantiasis of the *Greeks*;" to distinguish it from another form which is local.

In this disease the features become extremely altered. The lips are very thick; and the whole of the face, and great part of the body, are beset with hard tubercles; so that a person could not be recognized by those who knew him, previously to the appearance of the disease. The face is particularly rough. It is considered by Rayer to be a chronic inflammation; and you may either call it so, or an organic disease of the skin, just which you choose. It is characterized by numerous independent tubercles, of a livid colour; particularly developed on the face and ears, the upper and lower extremities, and likewise on the arch of the palate. The tubercles terminate, either by resolution, or by small ulcerations; which seldom extend in depth or breadth. They are covered by adherent crusts, under which a cicatrix is formed. It may occur in any part of the body; but, like lupus, it attacks the face much more than other parts. It has been said, by a great many writers, that the sexual desire becomes insatiable in this affection. Others, however, deny this; and not only so, but they go to the other extreme, and say it

is extinguished. The only case which I have seen, occurred in a person who came from Madeira; but it is also found at St. Domingo, and in the Isle of France. It has been cured, I believe, by the exhibition of arsenic. Many cases have been *improved* by this medicine; and slight cases have been absolutely *cured* by it; but, for the most part, the treatment is very unsatisfactory.

There is another disease which is called *elephantiasis*; but it is local, and does not spread throughout the body, or form tubercles. As it commences in a thickening of the parts below the skin, it is mentioned by Rayer as a disease, not of the skin itself, but as one of those diseases which extends from other parts to the skin.

This affection is what is called *Barbadoes leg*; and it is also called "the elephantiasis of the Arabs." It is a local disease, occurring in the scrotum, and at the lower part of the leg. The skin becomes diseased; but the cellular membrane beneath is the chief seat of the affection. It becomes excessively thickened and indurated; and at Barbadoes it affects sometimes only one leg. A friend of mine says it is produced by a kind of flea; which is not satisfied with being on the surface, but forms a bag beneath, in which it lays its eggs; from the continued irritation of which, he says, the disease is produced. How that may be, I do not know. The blacks, in the West Indies, suffer under the affection; and they are very dexterous, in dragging out the bag, by means of a needle, so that no harm ensues; but if any portion be left, an egg usually remains, and the disease proves very troublesome.

ICTHYOSIS.

The next disease of which I will speak, and which is classed by Rayer in *organic* diseases of the skin, is one which you will every now and then see; and is termed *icthyosis*, (from ιχθυα, *the scale of a fish*). It is not so rare a disease but that every one, in the course of his life, may perhaps see a few cases. It is classed, by Willan, with scaly diseases; but as the scaly diseases I have mentioned, have been all classed, with a number of others, in the list of inflammatory affections, this could not come in with them. Moreover, although a scaly disease, it is necessarily separated, in the arrangement of Rayer, from pityriasis, lepra, and psoriasis; because all those scaly diseases are of an inflammatory nature.

In this disease, there is no inflammation whatever. The skin is neither red, hot, nor tender; but it is covered by a large number of scales. These scales have been supposed to resemble the scales of a fish; but they are not imbricated,—they do not lie one over another, like the scales of a fish. Indeed, in many parts, the skin looks more like the feet of cocks and hens, than any thing else. This will give you the best idea of it. At a little distance from a person labouring under the disease, you would suppose that the skin was dirty;—the scales which lie upon it, being of a bluish colour. Of course it exists in various degrees of intensity, and of extent. The constitution is not in the lest degree disturbed;—the health is not at all affected.

There is nothing to be seen, but this organic affection of the skin;—the cuticle being formed with this diseased character.

The cause of this affection is not known; but it sometimes occurs from original constitution. I had two brothers under my care for this complaint; in each of whom, it made its appearance without any obvious cause. They were living at a distance from each other; one at Greenwich and one at Woolwich.* It seemed to be constitutional; and occurred in the progress of their age. It has sometimes been known to be hereditary. The skin feels dry and rough, and there seems to be no perspiration;—in general, the skin ceases to secrete a watery fluid. If the affection be more intense, it exhibits exactly the appearance that Alibert has represented in Plate xxxvii, as occurring on the knee; and which he calls *icthyose nacrée.* You observe that none of the scales are imbricated; and they look more like the skin of a hen's foot, than any thing else. This, at a distance, looks like a very dirty leg. The affection will sometimes cover the whole body. It is said, in books, that it is not seen exactly over the furrow of the spine; but in the cases which I had in the hospital last year, (or, at least, in one of them), that part was covered with scales, exactly like the rest. The face, in those boys, was very little affected; but the back of the neck suffered pretty severely.

The disease is generally thought, I believe, to be incurable;—at least, that internal medicine has little power over it. Pitch, however, is said to do good. Dr. Willan says he cured a lady, by giving her pitch. The pitch was made into pills; and she took as many as she could swallow in a day;—altogether one or two ounces. I certainly did not give these patients as large a quantity as they could have taken; but each boy swallowed forty or fifty pills, three times a day. One of them put them into his hand, and swallowed them as children do sugar-plums: he must have taken, every day, a quantity of pitch, nearer two ounces than one. At the same time that I employed this treatment, I had one of the boys rubbed over with olive-oil. He was sent to the warm bath; and when he came out, he was regularly oiled; and in this way he got well. Of course, I was quite in uncertainty, as to whether it was the *internal* or the *external* medicine that did him good;—whether it was the pitch within, or the oil without; and being told that he had a brother in a similar state, I requested that he also might come and be cured. I gave him pitch only; and in larger quantity than Dr. Willan had done; but he was no better for it. I then left it off, and had him oiled, not all over, but over one extremity only; and that extremity recovered its natural texture, while the other parts remained as they were. It was singular that, if a part which had been oiled touched, by chance, one that had not;—that is to say, if one leg touched the other, this last immediately improved, though not to the same degree. In this way the boy was perfectly cured. These two brothers went out of the hospital, with their skins as smooth and as soft as any girl's; and, for the time, they were certainly cured; but whether the

* See the "Medical Gazette;" Volume vii; Page 636.

disease will return, I do not know. The free application of oil, in these cases, answered perfectly. With regard to the latter boy, I made careful experiments with the pitch, the warm bath, and the oil; and such intervals elapsed between the various modes of treatment, that I was perfectly satisfied it was the oil which effected the cure. The disease was quite of the intensity represented in Alibert's thirty-seventh plate. At one period, I used *linseed*-oil; but that did no good; for it dried directly. The *olive*-oil, however, retained its moisture for some time; and answered completely.

The ordinary form of the disease is called, by Willan, "icthyosis *simplex*;" but now and then it occurs in a much severer form; and then it is called "icthyosis *cornea*," (from "cornu," *a horn*). The latter of these species is a rare disease; and is of an hereditary nature. Several instances have occurred, in the children of parents who had laboured under the disease;—not perhaps appearing at their birth; but occurring, like "icthyosis *simplex*," at a certain time afterwards.

There is a family in Suffolk, in whom it has appeared for several generations;—three or four; and (what is singular) always in the male line. No female has been known to have it. Every part of the body is covered with the disease, except the face, the palms of the hands, the soles of the feet, and the glans penis. I saw one of these men, the grandson of the person who is described in the "Philosophical Transactions." It was a famous family;—called, from the roughness of the skin, "the porcupine family." This man told me that the scales were shed every year; and when I saw him again, they were in the act of falling off. The scales, in this form of the affection, all stand side by side;—they do not overlap each other; and when the limb is put in a certain position, there is a pretty smooth surface, on which you may make a noise, just as in striking horn; but if the part be stretched, so as to separate the scales a little, you see the divisions between them. The plate I now exhibit, contains an exact representation of the arm of a man, when I saw him a little while ago. He described himself as the descendant of an American savage;—I suppose he wished to make himself appear very wonderful. He comes to London, every now and then, to shew himself for what he can get. There is an instance of the hereditary form of this disease, published in the ninth volume of the "Medico-Chirurgical Transactions," by a gentleman residing in Sussex: it occurred in a female. With regard to treatment, I conceive nothing can be done.

TRICHOMA.

As to diseases of the *appendages* to the skin (such as diseases of the nails), I must leave them to the surgeon; but there is one disease of the appendages, which is very interesting; and although we do not see it in this country, we have specimens of its effects;—I mean a disease of the hair.

It sometimes appears that the bulbs of the hair become inflamed;

a quantity of acrid stuff is poured out; the hair becomes very much entangled; and sometimes grows, it is said, to a great length. This disease is called *trichoma*, (from *θριξ*, *the hair*). Sometimes it is called *plica*, (from "plicor," *to be knit together*); and having been common in Poland, it has received the appellation, *plica polonica*. From the inflammation that exists, the scalp becomes excessively tender. It is found that the bulbs of the hair are gummy, and filled with a great quantity of liquid; and the least touch of the hair induces very great pain. The fluid which is discharged is gelatinous, and sticks the hair together. Some have considered that the disease is contagious; but I believe that is not the case.

The *causes* of this affection are not known. Some ascribe it to the cessation of the perspiration; but any disease may be ascribed to that. Why it occurs more particularly in Poland, than in any other northern countries, is also inexplicable. Then, again, as to the *treatment*;—you may recommend the warm bath, and all kind of things. If antiphlogistic regimen be indicated, by the strength of the system, and the heat of the part, we may suppose that it will do good. The treatment, however, is very unsatisfactory.

DISEASED SECRETIONS OF THE SKIN.

The diseases of the skin, as a secreting organ, have either been already mentioned, or will be mentioned hereafter. As to excessive perspiration, that I spoke of when speaking of intense secretions generally; and as to dryness of the skin, that is rather a symptom of other diseases. Dryness of the skin occurs particularly in icthyosis, in diarrhœa, and in fevers. As to diseased secretions of the skin with regard to quality, it is very common, as we shall find in rheumatism, for the skin to secrete an exceedingly sour fluid; so that the perspiration smells something like sour whey. Occasionally excessive perspiration of parts of the body (either of the hands or of the feet) will occur as an idiopathic disease. Many people are troubled with sweating hands; so that whatever they touch they moisten. This state, however, occurs particularly in the feet; and is very liable to be of an exceedingly offensive character. Some persons are tormented with this only at certain periods of the year; but some have always very offensive feet, from the diseased nature of the secretions that take place there. Many servants, I believe, have lost their places on account of this misfortune; they have been discovered to have offensively smelling feet. I had a letter, not long ago, from a medical man, residing at a considerable distance from London, stating that he was in this condition. He was in a state of extreme melancholy, on account of the copious and offensive perspiration, which he experienced in the feet. He had consulted every one within his reach; but had derived no benefit. I advised a number of things that occurred to me, as likely to prove beneficial; but I have had a second letter from him, telling me that they have done no good. I endeavoured to alter the secretion by

purging, and by applying astringents to the feet; and I advised a number of other things, which I now forget; but which appeared to me rational. I was not sure, however, that they would do him good; and so far as I know they did not; for the second letter which I received, betokened the same agony of mind, as that under which the first was written.

This is all I think it necessary to say, respecting diseases of the skin. I am afraid that I have detained you too long on the subject, and that you must think me tiresome; but I have omitted several. Some of these are trifling; with others we are so conversant, that they do not require any observations; and some of them are not common in this country. For sound and practical information, on the subject of cutaneous diseases, I cannot do better than refer you to the work of Rayer.*

PHRENITIS.

Having concluded my observation on diseases of the surface, I now proceed to consider those affections which are situated in the interior of the head. The first disease of which I will speak, according to the order I have hitherto pursued, is inflammation within the head; which is called *phrenitis*, (from *φρην*, *the mind*).

In the first place, you have the symptoms common to inflammation in every part; only that, in this case, they are situated within the head. There is a sense of constriction of the forehead, which answers to the sense of tension in other situations. You perhaps, also, have vertigo, and violent pain and throbbing in the head; throbbing of the carotid arteries; throbbing at the temples; throbbing within the head; throbbing at the back of the neck; and an acute stabbing pain in the head, or a dull heavy pain. Although you cannot examine the part itself which is inflamed, you have morbid heat; and that heat extends to the external part which is not inflamed; so that you have another mark of inflammation;—increased heat. Although you cannot see the part which is inflamed, and therefore cannot discern the redness, yet this frequently extends to the eyes, so that they are very much suffused; and thus you have a third mark of inflammation. Three, then, of the marks of inflammation are to be observed, though not actually at the part itself. Swelling, of course, is out of the question. Besides the pain, there is what we usually notice in inflammation;—morbid sensibility, extreme excitability of the mind, and intolerance of light and noise.

Another set of symptoms arises from a disturbance of the *function* of the part; so that there is delirium; and it is not of a mild or slight character, but violent;—*delirium ferox*. In the greater number of

* In taking leave of Cutaneous Diseases, we beg leave to recommend (in addition to the works recommended in the text) the excellent treatises of Messrs. Plumbe and Green. They are entitled,—"A Practical Treatise on the Diseases of the Skin; by Samuel Plumbe;" and,—"A Practical Compendium of the Diseases of the Skin; by Jonathan Green, M.D." Both are illustrated with Coloured Plates on a cheap scale.

cases, there is also constant watchfulness; the patient cannot sleep at all. Then, as to the *secondary* symptoms which arise from sympathy, you have pyrexia, which is perhaps violent. You have a pulse accelerated, generally full, and perhaps also hard. At any rate, in the greater number of cases, it is accelerated; and it is generally full and firm, if not absolutely hard. If it should so happen that, instead of violent delirium, there is more or less stupor, then, possibly, you have a *slow* pulse, but in general you have violent delirium, and a *full* pulse. The tongue is of course altered in appearance;—it is white. White is the usual colour of the tongue, in active inflammation; and the tongue in this disease is generally white; but as the powers sink it becomes brown. Not unfrequently, the stomach is affected; so that, in the greater number of cases, there is vomiting; and as the bowels become exceedingly torpid, there is likewise costiveness. The urine, of course, is generally high-coloured. As the disease continues, it is by no means unusual to notice convulsions; and at last, perhaps, paralysis.

Now these symptoms may arise from inflammation of the brain itself, or of the membranes; and either of these affections is called "phrenitis." There are no distinctive symptoms in these cases. You will read in books that the pain is more acute, and the pulse harder, when the *membranes* are inflamed (as in the case of *arachnitis*); but that when the *substance* of the brain is inflamed, the pain is more of a dull character, and the pulse is not so hard. But although, now and then, you may make a very good guess, as to how it may turn out after death, yet, I believe, in the greater number of cases, you will be wrong. In the majority of instances, both parts are inflamed;—the substance of the brain and the membranes; and frequently, when the membranes only are inflamed, there is not an *acute*, but a *dull* pain; and not a *hardness* of the pulse, but merely *rapidity*. Besides, the distinction is of no importance. The membranes are more frequently inflamed than the substance of the brain itself; and when the substance is inflamed, it is very rare indeed for the membranes not to be inflamed likewise. It has been said that when the *superficial* part of the arachnoid is inflamed, there is usually delirium; but that when the *basilary* part is affected, there is rather stupor and convulsions;—at any rate, spasmodic movements. So that you see some would have a diagnosis between inflammation of the brain itself, and inflammation of its various membranes; and others go still further; and when the membranes are inflamed, (at least the arachnoid), they would have us to infer that it is the superior part, if there be delirium; but that it is the basilary, if there be stupor and convulsions. This is the statement of some French writers.

After death you will find, with regard to the membranes, either a distinct red net-work, or a uniform redness, of greater or less extent. The minor degree (as I stated when speaking of inflammation in general) is where you can discover each vessel distinctly; and the higher degree is where there is uniform redness in any portion;

because the uniformity of the appearance arises from the excessive number of vessels which contain red blood. These patches vary exceedingly in extent and frequency. It is probable that, of the three membranes of the brain, the arachnoid is the most frequently inflamed; and you may have the inflammation, not merely in the enveloping portion, but likewise in that which lines the ventricles. You know, of course, that the arachnoid membrane dips into the ventricles, and lines them; and either one portion or the other, or both, may be inflamed. When this membrane becomes inflamed, it is opake, (which is a common effect of inflammation); and it also becomes thickened; which I likewise mentioned, formerly, as being a common effect of inflammation. There is generally a certain quantity of serum, either *upon*, or *in* the brain; and in the greater number of cases (as I mentioned when speaking of serous membranes in general) the serum is turbid. Not only, however, is the serum turbid, but often larger or smaller portions of fibrin are seen in it. Now and then the inflammation is so intense, that layers of lymph are found either upon the brain externally (that is to say, upon the *arachnoid*) or in the brain (that is to say, in the *ventricles*). Sometimes the fibrin is not in the form of layers, but has a jelly-like appearance; and you will find this to be much the most frequent at the base of the brain. Now and then you will find absolute adhesions. In general, when there is such violent inflammation, death takes place too soon for the layers of fibrin to become adherent; but death may not take place so rapidly; the process may be slow; the inflammation may not be so acute; and then adhesions may be formed.

If the disease be rather chronic, this fibrin may become very thick and organized; and you may have it to a very great extent. I was shewn, by a friend of mine, a portion of fibrin which covered nearly the whole of the brain; and I should think, that nearer a third than a fourth of it was an inch in thickness. It was perfectly organized; and formed an envelope to the brain. Pus is sometimes produced; and Dr. Baillie says, that he once saw pus all over the surface of the brain;—secreted, I presume, by the arachnoid. If it be the pia mater which is inflamed, this of course becomes red; there is more or less of fluid under it; and the fluid, from being confined under the membrane, (like the vitreous humour in the cells of its capsule), gives exactly the appearance of jelly. The jelly-like fibrin secreted by the arachnoid, of course lies *upon* the arachnoid; but the jelly-like matter which arises merely from fluid collected in the pia mater, lies *under* the arachnoid, the pia mater being within. When the pia mater is inflamed, you have, of course, redness of it; and now and then it has been said to suppurate, and even to have fallen into a state of gangrene. Frequently, a very large quantity of blood is observed after this inflammation, between the pia mater and the cranium. The great turgescence is not confined to the vessels of the pia mater. Indeed, in inflammation of the head, the blood is not confined to the interior, but very frequently extends to the scalp;

so that you will find all the vessels of the scalp exceedingly full; and you will find an increased secretion of serous fluid in the scalp itself. When the inflammation of the dura mater is local,—the effect of an injury arising either from a diseased bone, or external violence,—you know that the superjacent scalp (the scalp immediately over the part) becomes so affected, that it is quite œdematous; and this is a point attended to by surgeons, as indicating, after an accident, great affection at a particular spot within. In general, if the dura mater be inflamed throughout, there is great turgescence of the vessels of the scalp, and a serous effusion into it; but if the inflammation be local, then you may have, exactly over the spot, absolute œdema of the scalp.

When the substance of the brain itself is inflamed, you may have within a very large number of red dots, besides those which are always seen; and the latter may be double their usual size. You frequently, too, see a number of minute vessels;—the vessels of the part, which ought not to contain blood, do contain it; and you see thousands of them, like so many fine red hairs, in the substance of the brain. Now and then the inflammation, when situated within the brain, runs on to abscess. This is most usually the case when the inflammation is not general, but local. Dr. Baillie says that he once saw the brain in a state of gangrene. I myself have seen the dura mater in that state, but I never saw the brain so;—at least, if we are to judge of its existence from its being very lacerable, and exceedingly offensive. From inflammation, the brain will become exceedingly soft, so as to be a mere pap; something like very thick arrow-root and water. There are various degrees, of course; but still the brain is softened. Now and then, you will see softened brain and pus together. The brain generally looks of a dead-white colour; and of course the pus has more or less of a yellow tinge; but frequently they are seen together. It is very rare for the brain to become ulcerated on the surface; but now and then such a condition has been seen.

All these effects that I have mentioned, are frequently observed after *chronic* inflammation of the brain, as well as after an *acute* attack; and after chronic inflammation, there is another effect very frequently seen; namely, induration in that part which has been inflamed. Acute inflammation generally causes, besides the redness, a great turgescence of the vessels, large and numerous red dots, distinct red vessels, a great fulness of the larger ones, perhaps more or less effusion, and perhaps abscess. But besides all this, in chronic inflammation, the brain may become hard. Now and then, *acute* inflammation may produce hardening; but I believe it is more frequently the effect of *chronic* inflammation.

When the substance of the brain has been inflamed, and pus has been produced, it is sometimes not collected in a large quantity, so as to form an abscess; but is seen infiltrated throughout the brain; so that it has been found in the substance of the organ, in innumerable points. Where this is the case, the substance of the brain is

generally softened; because, in the first place, there must be a great degree of inflammation to produce pus; and when the pus is infiltrated so extensively, of course there cannot be induration. There is a great variety in the degree of this; so that you may have mere drops of pus, in the midst of softened portions, and then still larger drops; till you come to such large ones that they are, in fact, abscesses. When the pus is collected in the form of an abscess, there is a capsule produced, of various degrees of perfection; so that sometimes it has been known to have distinct coats. The contents of such abscesses will sometimes be exceedingly offensive; although, of course, no air could have had access to them. The parts surrounding an abscess in the brain, may be in all states;—it may be perfectly healthy around the abscess, or it may be diseased and softened; it may be altered in colour; and so on. The matter of the abscess may, of course, remain there, and be found shut up all around; or it may work its way, and burst into the ventricle; or it may burst into the nose, or into the ear. Abscesses more frequently occur in the hemispheres, than in any other part.

Having made these minute observations respecting suppuration, I must make some others equally minute respecting other changes. With regard to consistency, it is to be remembered, that the firmness of the healthy brain varies at different parts; so that a degree of softness which would be morbid at one part, would be only natural in another. It varies, likewise, according to the time at which we examine a body;—a fresh brain being firmer, than one some days old; for as soon as it is exposed to the air, it becomes very soft. With respect to different parts, I need not say that the tubercula quadrigemina are exceedingly firm. The consistency, too, varies according to *age*. The brain of old people is firmer than that of young persons. There is greater variety in the degree of change of consistence after inflammation, than in any other disease.

When the brain is softened, the part may retain its natural colour; or it may be yellow, it may be of a rosy hue, it may be grey, or it may be whiter than usual. If the change be not the result of inflammation, the part is generally exceedingly white: but the parts around, which are not yet softened, you will find rosy. But when the brain is softened, to say nothing of inflammation, the colour may be of all the varieties which I have just stated. It may be rosy from inflammation, or it may be perfectly white;—the redness being only in the surrounding parts. When the brain is inflamed, the softened parts may be mixed with pus, or with blood. If there be a vessel of any considerable size very near, the blood is poured forth into the softened part. It is the grey part, some think, which is the most frequently softened; but however this may be, every part of the brain is liable to it. When the membranes have been inflamed, it is the cortical part which is most frequently softened. From being in a bad neighbourhood, the brain under the inflammation suffers, and becomes softened. The softening may occur in one or more

spots; and, like the existence of pus, it may be exceedingly partial, or may be very general.

The spinal marrow (I may mention here) is liable to this softening, just in the same way as the brain; and this softening occurs whether there is inflammation or not; and is seen at all ages, but more particularly in old men. Generally, around the softened part, there is congestion and inflammation. Very often you see inflammation; but frequently you do not. The part is frequently softened, when no inflammation can be discovered. I recollect, distinctly, opening the brain of a young man, whose brain was softened in a great many parts. He was not a patient of mine; but a medical man invited me to see him. He had had paralysis, and the brain was softened; but the part was so white, that you could not conceive that there had been the least inflammation. I opened another individual, shortly afterwards, where there were the most intense marks of inflammation;—the brain was absolutely red around the softened part. This is a proof that, though these appearances are often connected with inflammation, yet they are sometimes wholly independent of it.

As to another change, the present *induration* of the brain, it may (like softening) be *very* local, or only *rather* local, or it may be *general*; and of course it varies very much in degree. Sometimes it amounts to no more than it would, if it had been hardened by acid; or it may amount to the consistency of wax; and now and then the hardness is still greater; it is of a fibro-cartilaginous character. When the brain is pretty generally indurated, it is said to be the effect of an acute inflammation; but, as I before observed, acute inflammation more frequently produces *softening* than *hardening*. However, in this case, hardening is more frequently thought to be the result of *acute* than of *chronic* inflammation; but it is only the *first degree* of hardness (namely, that which is equal to the consistency induced by acids) that occurs from this process. When the hardening is *general*, you would not suppose that such extreme induration, as to be called fibro-cartilaginous, could exist universally throughout the brain; nor, indeed, is it the case. The second degree of hardness (*waxy* hardness) is usually *local*; and the same is the case with the *fibro-cartilaginous* hardness. This is exactly what we should *à priori* suppose. These two extreme hardnesses are almost always the effect of chronic inflammation;—perhaps *always*; but I cannot positively say so. It is said that, after fever and general debility, the brain is frequently found in an indurated state; but I do not know this from my own experience.

Then, as to the red dots, they ought to be very numerous, or very large, or indeed both, for us to say that there is morbid redness. You will find people differ, every day, about the inflammatory appearances of the substance of the brain; some contending that there are not more red dots than there should be, and others that there are. I think, therefore, we ought not to be satisfied, unless there be

a very considerable number, or they are of very considerable size. They are more usually found in the *medullary*, than in the *cortical* portion of the brain.

In examining the brain and its membranes, with the view of ascertaining the existence of inflammation, we must carefully remember, that position has a very great effect; that if the head lie in the usual recumbent posture, and the body is not opened till several days have elapsed after death, extreme congestion may take place at the posterior lobes of the brain; such as might lead us to suppose that there had been a vast accumulation of blood during life. If the body have become putrid, this congestion may amount to effusion;—at least, the slightest touch will cause blood to be poured forth. We should carefully note whether position can have caused that accumulation of blood, which we observe on opening the head. We must remember, too, that we ought to look at the brain the moment we cut it; because, after it has been cut and exposed to the air, it becomes rather redder than before. Our judgment should be formed, therefore, immediately on slicing the organ. It is likewise to be borne in mind, that both the brain and the spinal marrow, without any accumulation at either part, have a redder appearance when death has taken place *rapidly*, than when it has occurred *slowly*;—that in sudden dissolution the brain and the spinal marrow are redder, than in a chronic decay of the body. It is said, too, that they are redder in persons who have been asphyxiated, who have been *suffocated*, or died from *want of air*,—than in other persons. We must also remember that the redness constantly varies in different parts;—that there is, for instance, more redness in the corpora striata, than in many other parts. At the base of the thalami nervorum opticorum, there are naturally a number of red vessels; the appearance of which we must not mistake for turgescence. We must remember, with respect to colour, that the white part of the brain contains more vessels in early life, than in old age; when it assumes a yellow hue, and has by no means the same number of vessels. We must also remember, that the *grey* portion of the brain is much more *vascular*, as it is termed, than the *white* portion. When a part is redder than usual, there are not more *vessels* than natural;—the vessels merely contain more *blood* than they ought to do; and therefore the expression "more vascular" is, strictly speaking, incorrect; but we merely mean, by that phrase, that vessels contain red blood which ought not to do so; and that those which should, have an increased quantity in them. The grey part is generally more vascular than the medullary portion. All these things are necessary to be remembered, if you wish to form a nice judgment of the morbid appearances in the head.

In many states of the body, the very reverse of all these appearances takes place. In some diseases the brain will become bloodless. In cases of starvation, it is said, the brain will become colourless. This you may suppose. When persons die through the want of some natural stimulus to which they have become accus-

tomed, there is also this extreme whiteness of the brain. I have seen this condition, quite independently of a general cause; quite independently of the loss of blood, or the want of food, or the want of stimuli; but from local disease of the cerebral arteries. I have seen the arteries diseased; so that they would not admit of a proper quantity of blood passing through them; and the brain has consequently been rendered far whiter than it naturally is. However, this whiteness is said sometimes to occur, after there have been signs of irritation of the brain; but I should think that it more frequently arises from the want of blood throughout the body, or from causes which prevent the brain from receiving its proper quantity of blood. So much, therefore, for the morbid appearances.

One of the most splendid books on the morbid appearances of the brain, is Dr. Hooper's.* Some of the plates are rather too shewy; but still they exhibit, extremely well, the appearances of inflammation. Representations of this affection, are also given in Dr. Baillie's work on Morbid Anatomy; but the plates not being coloured, they do not shew it very clearly.†

Inflammation of the brain is less frequently an *idiopathic*, than a *symptomatic* affection. It is more frequently seen as an accompaniment of fever, than of any other disease. It will arise, like any other inflammation, from cold applied to the body, especially when it is over-heated. It will occur also from simple heat; for if a person in a hot climate be exposed to the direct rays of the sun, without any covering on his head, (especially if he be lying down), inflammation of the brain may be the consequence. This is called *insolation*. Sometimes, instead of inflammation, apoplexy is induced; but this more frequently occurs, when the patient is making a violent exertion at the same time. Intoxication will produce inflammation of the brain. Spirituous or vinous liquors irritate the brain, or they would not intoxicate; and the irritation may amount to such a degree, that inflammation may occur. The same circumstance arises from mental irritation. Mental irritation, whether it arises from rage or anxiety, causes a great excitement of the brain. Want of sleep, or long-continued watchfulness, will have the same effect. Long continued excitement, of a less degree, may amount to the same thing as violent excitement for a short time. Excessive use of the brain cannot take place, without the want of sleep and anxiety. No person studies, without being auxious to *learn* what he studies, and his love of study induces him to sacrifice sleep.

Narcotics, which stimulate the brain, may also induce this condition of that organ. It is very common, after large doses of opium, hyoscyamus, and stramonium, to find a throbbing in the vessels of the head. After a person has taken prussic acid, he may experience throbbing in the head, or throbbing of the throat, and more or less

* "Morbid Anatomy of the Human Brain; illustrated by Coloured Engravings. By Robert Hooper, M.D."

† "Morbid Anatomy of some of the most Important Parts of the Human Body. By Matthew Baillie, M.D."

del rium. Wounds, of all descriptions, are common causes of inflammation within the head. Contusions, concussions, penetrating wounds, and mechanical injury of the head, may act in two ways;—as *exciting* and as *predisposing* causes. You may have inflammation directly induced by them; or such morbid irritability excited, that any common cause afterwards applied, may easily produce inflammation; so that when a person has had injury inflicted on the head, (whether it be fracture or any thing else), it is sometimes very dangerous for him to drink wine or beer, or spirituous liquors, for a very great length of time; or perhaps even to eat meat; for the slightest cause in these circumstances, may give rise to inflammation. This disposition will occasionally last for years. I recollect seeing a person who, twenty years before, had suffered fracture of the skull; and on taking a glass of spirits, he immediately became almost delirious. I mentioned, when speaking of inflammation in general, that I had seen delirium induced from rheumatism of the scalp, after an injury to the head.

Phrenitis has sometimes arisen from the cessation of an eruption. It is said that cessation of itch, has been followed by inflammation within the head; and sometimes it has arisen from the removal of a tumor. The tumor has taken off a great deal of excitement. It has required a considerable quantity of blood to nourish it; and the tumor being removed, there has been so much more energy throughout the system, and the brain has consequently suffered. This has more frequently occurred, when the tumor has been situated on the head itself. This is exactly what we should suppose. Analagous to the cessation of an eruption, is amenorrhœa, or costiveness. Women, every day, from the cessation of the menses, when they ought to menstruate, become the subjects of violent headache, giddiness, and symptoms of that description. Now and then actual inflammation of the brain will take place. Costiveness every day induces headache. If a person pass his usual time for having a motion, headache takes place; and it is said that inflammation of the brain has sometimes been the consequence of mere costiveness. Inflammation of the eye, or the ear, or the nose, or the sinuses, will sometimes spread to the brain. Phrenitis has frequently carried off patients who have had nothing more, at first, than inflammation of the parts I have just enumerated. Of course, inflammation will spread in the head, just as in other parts of the body. When the nose and the sinuses have been inflamed, in a great number of cases, the bones have been found carious. I myself have several times seen phrenitis arise from disease of the ear. When a person has what is called *otorrhœa*, or *otalgia* (in common language, a discharge from the ear, or ear-ache) you ought to be on your guard to notice the first symptoms he may mention of pain in the head, or the first anxious look that is displayed. The very slightest symptoms of cerebral affection, when there is a cessation of discharge from the ear, ought to put you on your guard. I have seen several cases of this description, where persons have had phrenitis after pain

of the ear, or a discharge from that organ. Some have had deafness; some have previously had a pain formerly; and then only discharge. From having read on the subject, before I witnessed these cases, I was on my guard. In the first case that I saw, there was a wildness in the person's look, and a quick pulse; and I expressed to the friends my belief, that the person would never go out of the hospital again alive. You will find this circumstance mentioned by several authors; and several instances are quoted by Cheyne, in his work on Hydrocephalus Acutus.* In these cases the bone is generally more or less carious. That portion of the dura mater which spreads upon the petrous portion of the temporal bone, is found inflamed, perhaps softened; and perhaps there is pus there. I mentioned that I had once seen the dura mater gangrenous; and that was in a case of this description. The portion of the brain lying over the ear was likewise altered in colour;—and even underneath there was a very considerable change. In a short time the patient became violently delirious; no bleeding, no mercury could stop it; and for this simple reason;—there was local disease keeping up the inflammation. There was diseased bone, and old ulceration within the ear; and you might as well have thought of curing inflammation, while a portion of depressed bone rested on the brain, or curing an ulcer where there was a piece of carious bone to come away, as curing this disease. When the skull has become affected by venereal nodes, it is not uncommon for the dura mater to become inflamed; and the patient to die with all the symptoms of phrenitis.

When the external parts of the head, the scalp, or the face, are inflamed; it is very common for phrenitis to occur. When erysipelas of the face and head proves fatal, I believe, in the greater number of instances, it does so by inducing inflammation of the brain itself, or of its membranes;—at least, in every case of erysipelas of the head which I have opened, I have found very considerable effusion, either upon, or within the brain, or both. This is not an instance of metastasis, or the occurrence of inflammation in one part, from its cessation in another; but appears to be an instance of the *extension* of inflammation; for the inflammation of the face, and of the rest of the head, goes on just as vigorously (in the greater number of cases) when phrenitis has taken place, as it did before it commenced.

Inflammation of the brain, however, certainly does occur sometimes in the way of metastasis. When rheumatism ceases in the joints, or gout ceases in some situations, phrenitis occasionally occurs; and it sometimes takes place after the cessation of inflammation in the salivary glands;—in the case of mumps, or (as it is sometimes called) *cynanche parotidea*. Phrenitis sometimes occurs immediately on the cessation of this species of inflammation; but sometimes it occurs on the cessation of inflammation of the testicle; which itself occurs, in the first instance, after the cessation of inflammation in the salivary glands. Sometimes the testes are inflamed

* "Essays on Hydrocephalus Acutus; by John Cheyne, M.D."

intermediately. It is very common, after inflammation of the salivary glands, for the testes to become inflamed; and when that inflammation ceases, phrenitis sometimes occurs; but sometimes inflammation of the brain occurs immediately on the cessation of the mumps themselves.

Phrenitis, however, as I before stated, is by far the most frequently seen as an occurrence in fever; and some may choose in this case to consider it *idopathic*;—excited by the contagion of typhus fever, or malaria, or remittent fever, or by excess, or vicissitudes of temperature. Some contend that fever itself, in many instances, consists of inflammation of the brain; and if they be correct, such phrenitis must be considered idiopathic. If, however, fever be a general affection of the system, then the phrenitis would be considered by those who hold that opinion as *symptomatic*. But these are mere differences of words.

Inflammation of the brain is predisposed to, by native congenital irritability of that organ. Some persons have extreme irritability of the brain. If such individuals be thrown into a passion, or be suddenly and violently excited, they are very liable to phrenitis. Habits of intoxication, injuries of the head, all organic diseases of the head, and especially tumours in or upon the brain, necessarily have the same effect. All these things give a tendency to inflammation of the brain; so that an exciting cause easily becomes efficient.

Inflammation of the brain itself and its membranes, like all other inflammations, may vary in degree;—from mere inflammatory headache, up to the most violent delirium. There may be mere headache,—characterized by a sense of tension, heat, and a degree of giddiness; or there may be simple giddiness without any pain, or watchfulness, or sleeplessness; and from these symptoms you may have all the intermediate grades, up to the most intense inflammation, and the most furious delirium. The same variations, of course, may occur also with regard to the *duration* of the affection. Sometimes this inflammatory affection of the head, will destroy the patient in a few days, or even in a few hours; and sometimes these symptoms may last for years. Chronic inflammatory headache (which is neither more nor less, in many cases, than phrenitis) may last for many years. When the disease is of this chronic character, you may have merely some thickening of the membranes; but if lymph be effused, they are rendered still thicker. There may be continuous adhesions; and even the bones themselves, as well as the membranes, may become exceedingly dense and thick.

Let us speak more particularly of the *milder* degrees of this affection. When it is in a very mild degree, a person complains more or less of headache; but that headache is attended by a throbbing sensation. There is a throbbing pain in the head, or a throbbing of the temples, or of some particular part; and the pain is usually most intense in the forehead. In the greater number of cases, the patient puts his hand up to his forehead. It is rendered worse by heat;—by the heat of the bed,-and by the heat of the fire. It is rendered

worse too by stooping; and especially on rising again after stooping. This will cause a sensation of great weight, or even a cutting sensation, to be experienced within the head. It is generally worse in the morning, from the continued heat of the bed, and the horizontal posture. There is likewise, in many cases, drowsiness; and yet the patient perhaps cannot sleep, on account of the intensity of the pain. There is a morbid heat of the head, and a morbid sensibility to light and sound. These produce, not an agony, but an uneasiness. The least noise frets the patient; and so does the light. The mind too, in these cases, is almost always irritable. Patients are easily put out of humour; and they are impatient. You will find, in these cases, that the pain rarely extends below the zygoma. If it be an inflammatory affection *within* the head, the face does not suffer; nor does the pain extend, for the most part, down the back of the neck. The pain is usually not increased by touching the scalp. Now and then, however, you will have the external part affected, as well as the internal; and then there may be tenderness of the scalp; but, for the most part, there is not.

In rheumatism of the scalp, on the contrary, there is almost always extreme tenderness. You will find many cases, where you will be exceedingly anxious to ascertain whether the pain complained of is internal or external; and you will find, by attending to these marks, that you will be able to say it is internal; or, by their absence, to say that it is external. In rheumatism, there is not only, for the most part, tenderness of the scalp; but the pain generally extends beyond the cranium. It frequently runs down the face; it runs behind the ears, and down the neck; and, very frequently, there is rheumatism in other parts. Sometimes there is great sweating;—just as in common rheumatism.

Now and then, however, the internal parts suffer in rheumatism; so that you have both external and internal inflammation. In these instances, the nature of the case is in general easily made out, by observing that, although the scalp is tender, and the pain runs down the face, and the back of the neck;—although there is rheumatism in other parts, and the pain is worse in the evening; yet there is likewise giddiness, drowsiness, and a throbbing of the inner part of the head. When you see two sets of symptoms like these, you may be sure that the two parts are affected;—the external and the internal; and, in such a case, although you see the patient is labouring under rheumatism, yet you must not trust to such ordinary remedies as, for the most part, cause rheumatism to disappear sooner than it otherwise would; but you must treat the case as phrenitis. If you see signs of internal inflammation, as well as of rheumatism, then, of course, you must treat the disease so much the more actively. Very frequently this pain of the head, when it is rheumatic, is attended with a great sense of coldness. In these cases, too, the pain, for the most part, is worse in the afternoon or evening; but the latter is by far the most usual; and that without any cause which we can discover. The pain is not worse in the morning; and the

addition of even two or three flannel nightcaps, does not make it worse; but in inflammatory pain of the internal part of the head, these things could not be borne; and (as I have before said) the pain is almost always worse in the morning; which arises simply from the mechanical circumstance, that the horizontal posture allows the blood to go more easily to the head, and renders its return more difficult; and from the bed increasing the heat of the body. But in rheumatism which is of a cold nature, you will find this very pain to be almost always worse in the evening, and to be relieved by heat. These circumstances clearly point out the nature of the case.

When pain of the head is of another description,—neuralgic,—you may frequently discover its nature, by the absence of these internal symptoms, and by the pain running along particular nerves. Sometimes it runs in the course of the supra and infra orbital nerves; sometimes it is particularly seated in the branches of the fifth pair near the ears; and sometimes you may trace it along the mastoideus.* At other times, however, it does not run along the course of particular nerves; but is situated in one spot, where there is a violent continual pain; and this is very common in hysteria. Sometimes the part itself is very tender; and sometimes not. When you see the absence of the usual symptoms of inflammation of the head, you may easily, in general, make out the true nature of the case. It very frequently attacks the brain on one side; not in the situation of the supra orbital nerve merely, but some other part of the brain; and the pain seems seated there. In this case it is not intermittent, nor does it run along the branches of nerves; but is situated in nerves terminating at one spot on the surface of the body.

A pain of this description is sometimes inflammatory; and is attended with these internal symptoms; and then you have to treat it accordingly. But frequently there is nothing but a fixed pain in one single spot; and it may last for a few days, or for a long time;—coming on at regular or irregular periods. Such a pain as this is frequently hereditary. I have known many members of the same family suffer the disease, especially after they have become adults.

* In prosecuting the subject of Diseases of the Nervous System, on which we have now entered, frequent reference will be made to different cerebral nerves; and often by different appellations. It may be well, therefore, to introduce a table of them here.

I.	First Pair. *Olfactory.*	
II.	Second Pair. *Optic.*	
III.	Third Pair. *Motores Oculoram.*	
IV.	Fourth Pair. *Pathetici.*	
V.	Fifth Pair. *Trigemini.*	1. Ophthalmic.
VI.	———	2. Superior Maxillary.
VII.	———	3. Inferior Maxillary.
VIII.	Sixth Pair. *Abducentes.*	
IX.	Seventh Pair.	1. *Portio Mollis.* (Auditory.)
X.	———	2. *Portio Dura.* (Facial.)
XI.	Eighth Pair.	1. *Glosso-Pharyergeal.*
XII.	———	2. *Pneumo-Gastric.* (Par Vagum.)
XIII.	———	3. *Spinal Accessory.*
XIV.	Ninth Pair. *Lingual.* (Hypoglossal.)	

It is a very hereditary sort of pain;—a pain over the brow coming on once in three weeks, or once a month, or more or less frequently. It is sometimes produced immediately by mental agitation, by overloading the stomach, or by putting improper articles into it; but, in many persons, in spite of every thing, it will come on, without any apparent cause, every few weeks. In many other cases, you will have a local pain;—a pain not intermittent, situated in different parts of the head; and very frequently it is hysterical. It occurs, especially, in hysterical patients.

Thus you have pain of the head of a decidedly *inflammatory* nature;—attended with inflammation of the brain itself or its membranes. You may have pain of the head of a *rheumatic* nature; and the rheumatism may be *active*, attended with heat; or of a *cold* character (which I shall hereafter speak of) relieved by warmth, and worse in the evening; or you may have another headache, which is *neuralgic*; and of that kind called *tic douloureux*;—running along particular nerves; but sometimes diffused, with morbid sensibility of a particular part; or of an intermittent character.

The last kind of headache which I mentioned, where it occurs particularly over the brow, has been called "*sick headache*;" because it is attended frequently with sickness. The stomach is deranged in the first instance, or it soon becomes deranged after the headache has begun. More or less, you find, headache connected with the affection of the stomach; so that it is called "sick headache." I believe that most persons ascribe this to the stomach; but I am quite sure it is very unjust to lay it to the charge of the stomach, in every case. The stomach has enough to do with diseases of its own, without being accused of the diseases of other parts. I am quite sure of this; because I have experienced pain of this description, two or three times, from evident local causes in the head. From having a draught blow on my head, when I have been overheated, I have had intense pain come on. I may mention that I rarely have any thing the matter with the stomach; but, after this pain has existed some time, I have had violent nausea, and then vomiting;—the stomach being only affected *sympathetically*. I have observed, too, in a great number of persons, that this headache has not been preceded by an affection of the stomach. People have declared that they digested well; and that they had a good appetite, not only up to the time of the occurrence of the pain, but as long as the pain was moderate; but when the pain arrived at a certain intensity, then the stomach fell into nausea and vomiting; and was disturbed as much as the head. There is no doubt that persons predisposed to these pains, may bring them on by overloading the stomach, or taking improper articles of diet; but it is to be remembered, that pain of the head will cause disturbance of the stomach; and therefore we have no reason to suppose that the stomach is in fault. I do not think that you ought to infer that the stomach originally is in fault, simply because it is disturbed as well as the head. In a great many cases, the stomach is not affected until the derangement

of the head has arrived at a certain point; but the state of the stomach will bring it on; and so also will costiveness; but it is precisely the same with all other affections of the head, and of the alimentary canal. If a person allow himself to become costive, he will be almost sure to have an inflammatory headache; and an inflammatory headache will induce costiveness. It is quite illogical to say, that so many affections of the head arise from the stomach and intestines; and it is just as wrong to say, that all affections of the alimentary canal depend on the head; yet there are parties who, if they do not say so in plain and distinct terms, nevertheless approximate very closely towards it.

As I shall not have another opportunity of speaking of this sick headache, I had better say that it is a most intractable complaint. I have known many persons have it, in whom all the remedies that were employed, failed in accomplishing any material good. If the system be too plethoric,—if you find the pulse full,—if you find them eating and drinking too much, you may do good to a certain extent, by bleeding and lowering their diet. Now and then the pain is so intense, that a degree of phrenitis occurs; and you must then treat it as phrenitis. But where it only comes on from time to time, I do not think that you will easily remove it; though you may lessen it, and prevent it from being as bad as it otherwise would. If the patient avoid every thing which is likely to do him harm, and pay proper attention to his bowels, this object may be affected. Now and then, the stomach is very much out of order, and an emetic may mitigate urgent symptoms; but it will not produce material benefit. I have tried iron, sulphate of quinine, arsenic, and every medicine that suggested itself to my own mind, or has been recommended by others; but it has been in vain. After a number of years, this description of headache will sometimes cease of its own accord.

As to the general treatment of phrenitis, it is perfectly easy. In the first place, you should have recourse to copious blood-letting; and my own experience leads me to think, that bleeding in the arm is just as good as bleeding in the neck. It is not advisable to bleed from the temporal artery, because you have to put a bandage on the head afterwards, which occasions more or less augmentation of the heat; and the bandage itself is often very troublesome. With regard to opening the jugular vein, that sometimes causes so much agitation of the patient, that it is not a very easy matter to accomplish it; but there is no difficulty in detracting blood from the arm; and, besides, I am not aware that there is any particular *advantage* in taking blood from the head. If you make a large orifice in the arm, make the patient stand upright, and produce a strong impression, it will generally answer every purpose. Cold should be applied to the head; but blisters are dangerous things. A bladder of ice laid upon the head, or a stream of cold water allowed to run upon it, are both very serviceable. In a case of violent phrenitis, evaporating lotions are hardly sufficient; and it is better to apply ice, or a stream of cold water. The posture of the patient should be

carefully attended to. The head should be raised as much as possible; and silence and darkness are indispensible. I need not say, that active purging is likewise required; and you may give antimony, colchicum, or mercury. I certainly would not give digitalis in such a case; for it is a narcotic that frequently produces irritation of the brain, when exhibited for other affections; and not only so, but it is much less to be depended upon in inflammatory cases, than other medicines. It will, moreover, frequently produce delirium or headache. Antimony is a very good remedy, if you give it so as to keep the patient in a state of constant nausea; colchicum, likewise, is excellent; on account of its depressing the whole system, producing nausea, and purging the patient violently. But altogether, as I said when speaking of the treatment of inflammation in general, I should place the greatest reliance on mercury; and should get the mouth sore as quickly as possible. Sinapisms to the feet may likewise be exceedingly useful; and after free bleeding, a blister applied to the nape of the neck, may be advisable. After a time, if the inflammation be not very violent, a blister may be applied to the forehead; but it is not till towards the close of the disease, that I would recommend any blisters to be applied to the crown of the head. I need not say, that the patient ought to be starved; and that rest should be strictly enjoined. If the disease have arisen from the cessation of another disease, we ought, if possible, to re-excite the latter. If it have arisen from the cessation of gout or rheumatism, we ought to apply sinapisms to the extremities, to re-excite them.

In chronic inflammatory headache, the same treatment is required; but it should be carried on, of course, with less vigour. It is astonishing what perseverance in bleeding is sometimes required, in order to effect a cure in these cases. You must bleed every week or ten days; either from the arm, or by cupping, or by leeches. The application of cold, of blisters to the nape of the neck, and to the forehead, and likewise setons in the neighbourhood of the neck, are all useful. You will often find the disease give way to mercury, as soon as the mouth is tender. I have seen this in dozens,—I might almost say *hundreds* of instances. Bleeding did good to a certain extent only; but as soon as the mouth became sore, away went the pain. I need not insist upon low diet, and attention to the state of the bowels.

I must mention, however, that, in some cases which have proved rebellious to starvation, the application of cold, setons, frequent bleedings in various ways, and ptyalism long continued, I have seen the disease yield rapidly, on taking away blood from a more distant part. I have seen several cases in which, on applying cupping-glasses no longer to the nape of the neck, but to the hypochondrium, the disease has rapidly given way; some recommend them to the verge of the anus. I have myself been surprised, on some occasions, to see the disease decline immediately, when cupping was instituted on the abdomen.

You will frequently find the same perseverance in bleeding necessary, when the phrenitis or inflammatory state of the head is not

characterized by *pain*, but simply by *giddiness*. I have seen some cases of intense vertigo (in which there was sufficient strength of body to bleed freely) ultimately give way to that measure. In instances where I could not make out any sympathy with the stomach and intestines, but where it appeared to be an inflammatory state, the chief symptom of which was vertigo, or where that was almost the only symptom except throbbing of the head, on motion, or taking stimuli, I have seen continued depletion effect a cure. If patients feel themselves worse for stimuli, and you find the pulse sufficiently strong, I would certainly bleed. I recollect a case of severe vertigo, in a young man, attended by no other symptom whatever; and as he was young and strong, I bled him to between twenty and thirty ounces, with no relief whatever, but with no aggravation of the symptoms; and I was obliged to have recourse to this extensive bleeding several times, before he was cured. He had been ill, from this giddiness, for many months; and used to roll about the room with it; but he recovered simply by repeated bleedings to this extent. It is just the same sort of case, as chronic inflammatory headache; only that these symptoms arise from the particular part of the head, which the inflammation has attacked. I had a case, only the year before last, in which this vertigo was acute. A young woman was suddenly seized with intense giddiness; but without any pain. There were some very odd symptoms about her. Her eyes were pushed far more forward in the orbits, than in health; and every event appeared old to her;—so that there was an extraordinary affection of the brain. If she put down a tea-cup, she fancied that it was years ago; and she could not get over this feeling. These were her symptoms; and as she was plethoric, and her pulse justified bleeding, she was twice depleted very copiously; and by that simple means, together with purging, she got completely well. There was no pain whatever in this affection.

It is to be remembered, however, that all these affections,—whether there be an inflammatory state of the head, or inflammatory headache, or simple vertigo,—may depend upon an opposite state of the brain. I have seen several cases of chronic pain of the head, which have resisted all anti-inflammatory treatment; but which gave way very speedily to the exhibition of iron, quinine, or other tonics, and to full diet. You can only judge of these things by observing, not only how long the case has existed, but that the pulse is feeble, and that stimulating the patient does not make him worse. If this be the case, you may safely resort to an opposite mode of treatment; and I believe iron is the best remedy you can employ. In other cases, it is well to apply cold, in the form of a shower-bath; which is a powerful tonic. This state appears to be a morbid sensibility, without any great accumulation of blood; and certainly without any violent action of the brain. With respect to vertigo, I recollect seeing a gentleman, last year, who had a constant sensation as if he were going to fall forwards;—a sense of plunging as he sat in the chair. He had no pain at all; but he had heat; and the throbbing

sensation in his forehead was terrific. He was upwards of sixty years of age; but he had a florid complexion, and was a strong old gentleman. It seemed to me, that the case required antiphlogistic treatment; and I recommended that it should be put in practice, and that his diet should be low. I may mention, that he was a very excitable person; that although he was so old, he said he had not lost any of his vigour; that since he was twenty-five, he had not experienced the least change; and that in hot weather, he experienced the strongest excitement. In general, people are not so sensitive at that age; but the slightest effects of various agents, were distinctly perceptible to him; — in fact, such agents as would not have affected other individuals. Seeing all this, and that there was such extraordinary excitement within the head, I concluded that though he had no pain, yet the case was certainly of an inflammatory nature. Antiphlogistic measures were put in practice; but, as I understood, without the least benefit. He was afterwards allowed meat, wine, and stimulants of all kinds; and I was told that he got perfectly well. Here was an instance of vertigo of an opposite kind. It was difficult for me to form an opinion, though I had paid great attention to these diseases; and I formed a wrong judgment. I thought antiphlogistic treatment would be best; and it is possible that the other mode might not have succeeded, if anti-inflammatory treatment had not been put in practice first. You will have inflammatory pain of the head, of a nature to be benefited rather by stimulants and tonics, than by depletory measures; and you may have these partial symptoms of affection of the head; — such as vertigo; which must be treated in the same way.

It is to be remembered that, after the acute disease, you may have a state in which nourishment, and even opium, are the chief remedies. At the close of phrenitis, especially if you have evacuated well, there sometimes will be a continuation of delirium; and if you evacuate still more, you will kill the patient; and sometimes this state will come on, without any previous active inflammation. In such a case as this, opium is the proper medicine; and for the most part, the patient's diet must be good; but of this I will speak hereafter, when I come to consider the next class of diseases of an inflammatory nature, occurring within the head. It has been called *delirium tremens*; and as it has received a particular name, I will speak of it separately; but it is a state which will occur without any great tremor, at the close of common inflammation of the brain.

HYDROCEPHALUS ACUTUS.

There is another instance of inflammation of the brain; which causes, for the most part, great effusion; and as this effusion was formerly noticed more than any thing else, the disease does not go, or has not gone, by the name of "inflammation of the brain;" but has received the peculiar appellation of *hydrocephalus acutus*. Some who have been more precise in their language, have chosen to say *hydrencephalus*; and some have called it *phrenitic hydrocephalus*. It

is a disease seen, in the greater number of instances, in children. In fact, it particularly occurs in the phrenitis of children; but the phrenitis of *adults* is sometimes attended by very copious effusion. When a child has inflammation within the head, it usually goes by the name of "hydrocephalus acutus;" but in its essential character, it is very much the same as the common phrenitis of adults.

It frequently comes on, in children, after premonitory symptoms;—after heaviness of the head, dullness of the mind, and a disturbance of sleep; and the child too, frequently has frightful dreams, wakes screaming, and is found to be restless both up and in bed; and to be exceedingly peevish in temper. There is, likewise, a continual knitting of the brows. I may mention that the last is a common symptom in inflammatory states of the head. The child, too, is frequently observed to walk insecurely;—to totter a little; as if it experienced a certain degree of vertigo. Some say they observed children, under these circumstances, have a great trick of putting their hands behind their head, and pulling the back of their neck. There is occasionally darting pain in the head; and of course there is feverishness. The body is hot; and the pulse is quick, and exceedingly various. You will observe, too, that from the feverishness, the child picks his nose and lips. The latter are dry; and this gives rise to a degree of itching; so that the child is continually picking its nose and lips. Of course there is thirst, and loss of appetite; and frequently there is a fœtid breath. The stomach and bowels are disturbed; the tongue is white, yellow, or brown; nausea is experienced, and also vomiting and costiveness; though occasionally there is purging and griping. The fæces are observed to be white, and to have a sour smell; though, on the other hand, they are sometimes dark and very fœtid. The abdomen is freqently full, especially at the epigastrium; and there is frequently tenderness on pressure; but this is particularly noticed at the epigastrium, and the right hypochondrium.

These premonitory symptoms may go off spontaneously; and if the practitioner attend to them, he may remove them, so that nothing follows. Whenever we see such symptoms as these, we must recollect that they may be easily followed by hydrocephalus; and it is our duty to attempt to remove them, which we may generally accomplish; but if we fail, and hydrocephalus does come on, we have, at any rate, done our duty. It is true that hydrocephalus might not have supervened; but it was impossible for us to tell that; and it is our business to do what we can to prevent it. These symptoms may last only a day or two, and then come on with increased severity; or they may last many weeks; and the continuation of these symptoms has been detailed by Dr. Yeats;* who terms them the premonitory symptoms of this disease. In fact, he directed the attention of the public to these circumstances; under the idea that the disease might be prevented.

* "Statement of the Early Symptoms which lead to the Disease termed 'Water in the Brain.' By G. D. Yeats, M.D."

When the disease is formed, it has two stages; and it may occur without any premonitory symptoms. Not only may the latter vary in duration,—from a day to a few weeks; but they may last only for an hour or two; and, indeed, they may not exist at all; for the child may be seized in a moment. When the disease occurs, there is severe pain in the head,—shooting through it; so that the child lays its head in its mother's lap; and is continually crying,—"Oh, my head!" It is awakened, too, from sleep, by this violent shooting pain in the head. The latter is found to be very hot; and there is intolerance of light and sound; and from the sensibility of the retina, the pupil is very much contracted. From the extreme irritation of the nerves, I presume, there is strabismus; but some ascribe this to *paralysis* of certain nerves; so that some muscles get the ascendency over others. However, you will see it before there are any signs of paralysis;—you will see it during the mere excitement of inflammation. Besides the squinting, there are convulsive spasmodic motions of other muscles; and frequently there are general convulsions. Sometimes there is delirium at last, but sooner in some cases than in others; and the delirium may not be constant. In the first instance, it is *not* constant. The child is observed to turn its head continually about on the pillow;—never to be at ease; and there is a peculiar motion of its arms; so that it saws the air with its hands, and tosses them over its head. Whenever you observe these symptoms, you may be sure that the disease is formed. There is now violent pyrexia; the pulse is rapid and full; and Golis, a physician at Vienna, (who has the care of an establishment for infants there), says that the abdomen sinks, and becomes flatter; and that this is a pathognomonic sign of the disease; so that if this occur, you may be certain as to the nature of the disease. Whether he is correct, I cannot tell. There is, in this stage, costiveness; and the stools are usually very fœtid, and of a very dark colour;—something like tar. About this time, the abdomen (especially the epigastrium, or the right hypochondrium) is exceeding tender; and the vomiting which occurred as a premonitory symptom, is now perhaps very frequent. These symptoms, like the premonitory, may exist for various periods; but, of course, they cannot exist so long as the premonitory symptoms may. They may last only a few hours; or they may last a day or two; or they may be extended to seven days; but I believe they very seldom go beyond that.

After this, the second stage comes on; which is that of exhaustion. There is more or less blindness now; and the child is unable to discern one object from another; and perhaps it cannot perceive the light, which is now borne very well. There are no longer twitches; the pupils are no longer contracted, but dilated; and sound no longer produces disturbance, but appears not to be heard. There is a general insensibility; and the child, from being delirious and irritable, is now drowsy; and the convulsions come on with more intensity; as likewise does the squinting. The pulse is no longer quick, bnt weak and slow; and, in fact, an apoplectic state

occurs. There is sometimes hemiplegia, or local paralysis of the limbs; and there is likewise paralysis of the eyes. Sometimes you will see the two stages marked very distinctly; but they certainly run into each other: so that both may exist together in a limited degree. This may last for three weeks; but it rarely, I believe, extends much longer. The first stage does not subside entirely, but there is a great diminution of it; and the second stage comes on, but is not fully formed. The first stage, without the second, rarely extends beyond seven days; but when the second stage begins before the first has come to a close, the two may continue together for two or three weeks. Now and then the pulse is quick throughout the disease; and when the apoplectic state comes on, the pulse is as rapid as before, or very rapid.

It has been observed that, before death, after the second stage has been fully formed, there are again symptoms of excitement; so that some writers have divided the disease into three stages. But this, I believe, does not occur very frequently. Now and then, however, there is excitement; and the pulse, after it has been slow, will become quick. There will appear to be some sensibility of the eyes and ears. Even the muscular powers, which have been implicated, will be partially restored; and likewise the mind; so that not only the delirium, but even the stupor, will pass off; and the child again knows its friends and parents. Some of these symptoms will occur without the others. Occasionally the mind will be restored to a certain extent, and the senses return; and yet the pulse will continue low. Now and then the pulse will be rapid; and no other change occur. But, now and then, this restoration of the powers of the mind, and the powers of volition in the muscles, will take place where great effusion is found after death; and where there is every reason to believe that effusion existed, at the time that this restoration occurred. The common people term this "a lightening before death;" and you will observe, in many diseases, an apparent amendment just before the fatal event. But when this last change does occur, the pulse generally becomes very rapid; and for the most part, whatever restoration there may be, there is more or less stupor observed; and perhaps convulsive actions.

The disease occasionally occurs in a moment; and when that is the case, from the idea of water being so prevalent among medical men, it has been called, by Dr. Golis, *wasserschlag*, or *water-stroke*. But it is to be remembered, that you see children die from this disease, without effusion taking place; and on that account, the name of *arachnitis* would, I think, be much better than "hydrocephalus." I believe I mentioned, when speaking of inflammation, that sometimes, in a moment, a child will have a rush of blood to the head;—that it will breathe hard, and die; and that afterwards, a great collection of blood may be found in all the vessels of the head. The disease sometimes, when it terminates, leaves more or less paralysis; sometimes it will leave hemiplegia; and some patients have recovered with the loss of one arm, or of one leg.

After death from hydrocephalus, you may find the same marks of inflammation and congestion in the brain and its membranes, which I mentioned when speaking of phrenitis. Sometimes you will find nothing more than that; so that the strabismus or squinting, the dilatation of the pupils, and the coma, are not necessarily the result of *effusion.* You may find no effusion whatever; notwithstanding that the child has died from *hydrocephalus* (*υδωρ, water*, and *κεφαλη, the head*); and although before death there were strabismus, dilated pupils, and unconsciousness. Death will arise from the mere irritation and excitement which the child has undergone; and from the compression, and perhaps fulness of the vessels; but certainly it is not necessary that there should be compression from effused fluid. Frequently you will find the same congested and inflammatory state on the scalp, that there is within, and a great deal of serum;—just as I mentioned has been occasionally observed in common phrenitis.

But sometimes you will not find any of these things. You will sometimes find nothing. I have myself opened children who have died of this disease, and have found nothing;—the congestion and the signs of an inflammatory state having subsided, I presume, after death; and the blood having left those vessels in which it ought not to have existed, and returned to its usual route. It is possible for even the marks of inflammation to cease after death, before you examine the body.

If, however, there be fluid, it varies very much as to its clearness. As I mentioned, when speaking of phrenitis, it is sometimes perfectly limpid and uncoagulable. It will be found, of course, *in* the brain or *upon* the brain; and it is generally found to amount to from two to six ounces. The brain at large is sometimes found œdematous after this affection; especially at the corpus callosum, the fornix, and the septum lucidum; and this œdematous state exists either alone, or in conjuction with ventricular effusion. In infants there is great ventricular effusion, at the same time that you find œdema of the brain; and not unfrequently the same circumstance is noticed in adults; but it is generally seen in infants. The brain, after this disease, is very often found soft in particular parts. Particular parts appear to have become softened by the inflammation; and it is not an uncommon thing to meet with scrofulous tubercles in the brain itself, or its membranes:—shewing the pre-disposition to disease in the brain. These, of course, existed before the hydrocephalus was set up; but they shew the tendency to disease of the brain.

The longer the disease has lasted, the greater in general is the turgescence of the vessels, and the softer is the brain;—at least according to Dr. Golis; who has had more experience, I suppose, of this disease than any one else. He also mentions that effusion will sometimes take place in a very few hours. Now and then, we have marks of inflammation in the liver and in the intestines. It is not by any means, uncommon, for an inflammatory state of these parts to co-exist with hydrocephalus.

This disease, as I have already stated, is for the most part an

infantile disease; and it chiefly affects children from two to ten years of age. Sometimes it occurs about puberty, sometimes afterwards; but it chiefly affects children from two to ten years of age. It is an affection that very much runs in families; so that you may meet with some who have lost several children by hydrocephalus. It frequently succeeds other acute diseases, especially hooping-cough; now and then (*frequently*, indeed) it occurs during teething. As to the history of this disease, it is certainly true that Hippocrates speaks of water in the brain; and he mentions many symptoms of acute hydrocephalus; but this particular disease was only first accurately described by Dr. Whytt, in 1768. He gives a full description of the inflammatory symptoms.* Dr. Cook, in his work on Nervous Diseases, states that Dr. Gregory used to say it was described by a surgeon at Glasgow, in 1753; and that M. Petit, a celebrated surgeon at Paris, gave many of the symptoms in 1718. But its description was not thoroughly given, till the latter part of the last century.

Our prognosis ought to be exceedingly cautious, even during the premonitory stage. It ought to be still more cautious in the first stage of the disease itself; and it ought always to be unfavourable in the second stage, although this is sometimes recovered from; and so it is said, is even the third stage, when excitement takes place. It is said to have been recovered from spontaneously; but I have never seen it. However, children have actually recovered from the disease in the very last stage. Even by medicine and the best means, recovery is very rare; and perhaps a favourable issue occurs quite as frequently by the spontaneous efforts of nature, as by art. Indeed, to shew that the disease may be recovered from by a child apparently in the most hopeless state, it is said that there is no one symptom which indicates death with certainty, excepting slow breathing. Recovery is rare; so that we should be cautious in our prognosis, even when only the premonitory symptoms exist. It is still more so when the first stage has set in; and certainly we should not give any hope at all in the second.

The disease is clearly inflammatory; and the treatment of inflammation is that which is demanded for its cure. From the effusion which is generally produced by the disease, one would suppose that there is an inflammation of the arachnoid. The fluid which is effused in greatest quantity, is found in the ventricles lined by the arachnoid, and upon the brain in the cavity of the arachnoid; and, therefore, one would suppose that the chief seat of inflammation is in that membrane. The effusion, I need not say, is the mere result of inflammation.

During the *premonitory symptoms*, we have first to empty the bowels well; and, for this purpose, calomel in full doses answers better than any thing else;—at least, it is best to lay a foundation with it; and then to carry it off by another purgative, such as castor

* "Observations on the Dropsy in the Brain; by Robert Whytt, M.D."

oil. It is always best, in the first instance, to premise a dose of calomel. Other purgatives then answer to a certainty; and the bowels are well cleared. This open state of the bowels is to be preserved, by doses of mild purgatives, such as castor oil, repeated from time to time. Perhaps one or two very full doses of calomel would be advantageous. It might also be useful to give mercury in small doses (such as Hydragyrum cum Cretâ) if the calomel should operate too much; but the proper treatment is certainly to empty the bowels well; and, if you think it requisite, to give mercury in repeated doses, for the purpose of producing a mercurial action on the system. If there be any tenderness of the abdomen, this of course should be carefully attended to; and leeches should be occasionally applied. In such a case, it would be well to avoid giving acrid purgatives, lest you should increase the inflammatory state; and if mercury be still given, it should be in the form of Hydragyrum cum Cretâ; or you may exhibit castor oil from time to time, in order to empty the intestines. Wherever the abdomen is tender, there leeches should be applied. The warm bath is useful in almost all diseases of children; but, to render it advantageous, it should be employed twice a day; and I should think it an excellent remedy in the premonitory stage of hydrocephalus. The diet should be mild; and leeches should be applied to the head, from time to time. If you do all this, you will very likely get rid of the morbid state, and the disease itself will be prevented.

But when the disease is *fully formed*,—when you see that the disease is actually *in existence*, and not merely *hanging over* the patient,—then you must act with the greatest vigour. You must consider that you have an acute inflammatory complaint to treat; and therefore you must bleed freely and early; and it is admitted, on all hands, that you should exhibit mercury with the greatest freedom. Those who are not aware, or do not attend to the circumstance, of the power which mercury occasionally exercises over an active inflammatory state of the system, all allow that in this disease, it is of the greatest use. You will find that, in the treatment of this disease, all persons praise mercury. As to bleeding, it is a very good practise to open the jugular vein, or a vein in the arm, if the child be old enough. Abundance of leeches should be applied to the head. While you are doing so, you should carefully attend to the abdomen; and if there be tenderness, you should apply them there likewise. Very large doses of calomel are borne in this disease; both from the circumstance of the disease being of a highly inflammatory nature; and subsequently, in the second stage, from the whole system being in a state or torpor. During the compression of the brain, or the softening of it, very large quantities of calomel are admissible. The bowels, I need not say, ought to be thoroughly cleared several times a day; and mercury given as rapidly as possible. The bowels will bear many doses of calomel in the twenty-four hours; but if, from their irritability, they will not bear calomel, you must try whether Hydragyrum cum Cretâ will answer better;

or you may lose the mercurial effect. It is a good practice to rub mercurial ointment into the parts, as fast as it can be done. The patient should be kept as upright as possible; and it is desirable, if the child be hot, to apply cold to the head; and you will find ice to be the best application. After proper bleeding, local and general, sinapisms or blisters may be applied to the abdomen. In the latter stage of the disease, a blister to the nape of the neck, or the warm bath, may still be of use; but you cannot expect great benefit from them, in such an active inflammatory disease as this. The bladder of ice should be kept on the child's head, while it is in the bath.

In the *second stage* of the disease, when there are signs of torpor and paralysis;—when the pupils are dilated, and the patient cannot see;—when the pulse is perhaps slow, and the apoplectic symptoms prevail;—the same plan should be pursued, according to the strength of the patient. If the inflammation be still going on, the signs of compression may not arise from effusion, but from the great congestion of blood;—at any rate, the inflammation may still exist. When you can apply leeches no longer, still you may continue the exhibition of mercury, and antiphlogistic treatment, as far as you dare. You may now apply a blister to the whole head. There is no danger whatever from it, in this stage of the complaint; and it frequently does great good. When all these things have failed, it is said that some children have recovered by the use of elaterium; and others by the employment of digitalis and squills. If any thing of this description be given, it should be in small and repeated doses. If elaterium be given with the view of exciting an evacuation of fluid, it is best to put a grain into two ounces of liquid; and if the effusion be going on, to give the child a tea-spoon full of the mixture, every now and then, till it operates in the way you wish. As to digitalis and squills, it is best to give them in small and repeated doses. I never myself recovered a child in this state; but different persons have told me, that they have seen a child so recovered.

In the *last period* of the disease, opium has been given with advantage;—not for the purpose of cure, but to procure sleep and tranquillity; and it has never been productive of harm. In the latter part of the disease, it may be necessary to give good nourishment, in order to support the patient; and even stimulants may be required; for after the disease has existed for a length of time, you may have a state of irritation of the brain, arising from mere debility. The inflammation may have all subsided; and an opposite plan of treatment to that which was at first imperiously necessary, may be required.

SPURIOUS HYDROCEPHALUS.

It is very necessary you should know, that the symptoms just described, or many of them, may occur in a state of the system, in which the loss of blood, or even purging and starvation, would be fatal. It now and then happens, that a child shall become exceed-

ingly drowsy,—shall have a dilatation of the pupils,—shall perhaps squint, and may likewise experience more or less delirium, so as to appear to be labouring under this disease. But usually, in such a state, there is no pain of the head, or it is only transient; and the skin is cool, or absolutely cold. The pulse (as in hydrocephalus, and other inflammatory diseases) is quick; but it is weak; and the face is not flushed as it is in inflammatory diseases; but is perhaps pale, or flushed only transiently. Now in this state, if you apply leeches, or if you purge, in all probability the patient will sink. This is a state that will sometimes happen from the first. A child, perhaps after diarrhœa,—after something which has weakened him very much, falls into a state of torpor of the brain. It becomes heavy, stupid, and half blind. The pupils are dilated, and there is perhaps even squinting; but I do not know that the latter is common. This set of symptoms will come on, at the end of the inflammatory stage of hydrocephalus; and sometimes it is the result, as I just now remarked, of some previous disease.

When children have died in this state, frequently nothing morbid has been found in the head; or the vessels of the brain have merely been found unusually serous. There may be a little effusion; but in many instances the vessels have been less distended with blood than usual.

When a child is in this condition, it is best to give it beef-tea and ammonia every three or four hours. The rapidity with which improvement takes place, is very great. I believe we are indebted for our knowledge of this state, to Dr. Marshall Hall. It was imagined (and I myself fell into the error) that Dr. Gooch was the first person who described it; but Dr. Marshall Hall wrote to me on the subject; and it appeared, on referring to his book, that the priority of discovery was due to him; and that Dr. Gooch was himself indebted to Dr. Hall for a knowledge of the fact. It is a condition of which I was not aware when I began to practise; but it is of the highest importance to be acquainted with it; because inappropriate treatment will to a certainty destroy life.

In most inflammatory diseases, a stage may come on, in which perseverance in the antiphlogistic plan is highly improper. A state of irritation comes on, in the stead of inflammation; and the treatment appropriate to the one, is most inappropriate to the other. It was only on Sunday last, that I was sent for to a person who had evidently laboured under phrenitis. He had been bled, purged, and so on; but that morning the time had arrived for doing no more antiphlogistically; but for adopting the opposite plan. His pulse was 120, and feeble; there was no flushing of the face, and no redness of the eyes; but there was delirium and feebleness of pulse;—indicating that no more evacuations were necessary. So far from that, we agreed to give him a full dose of opium. He took four grains, which would have been highly injurious in the inflammatory stage; but it immediately put an end to all the symptoms. He had a quiet sleep; and awoke without delirium, and with a strong pulse.

Now it is just the same in children. After hydrocephalus has lasted some time, you may judge by the pulse and paleness of the patient, that evacuations will *increase* instead of *diminishing* the mischief; and you ought to be aware, that just such a state will come on without inflammation. There may be a state of irritation and debility, without inflammation having been present; as we shall see in the disease called *delirium tremens*, which occurs in adults. In this affection, the tongue is in a state of tremor; the pulse weak, the face pale, and the eyes not turgid. I shall mention that delirium tremens is sometimes inflammatory; but in the greater number of cases it is not; and though the patient is incoherent, talking, and trying to get out of bed, yet there is sufficient in his general state to shew, that the disease is not one of inflammation, but of irritation and debility.

To return, however, to inflammatory diseases; adults will sometimes experience great effusion in the head, during inflammation of the membranes. Hydrocephalus is almost peculiar to children; but now and then it occurs in adults; although rarely to a great extent, or in the marked manner that it does in children; but after any inflammation within the head, it is very common to find more or less effusion.

CHRONIC HYDROCEPHALUS.

There is another form in which water or serum is collected within the head. You will recollect that, when speaking of inflammation and its effects, I stated that effusion was commonly the result of inflammation of serous membranes; but I stated that effusion in a serous membrane, will take place frequently with a very slight degree of inflammation; and sometimes there is scarcely any to be discovered;—perhaps there is none, at least we are justified in saying so. I mentioned that the same is the case in respect to sweating. A person may sweat, in acute rheumatism, from the intense heat of the body; but a person will also sweat in the agonies of death, and in extreme debility. So with regard to purging. Purging frequently depends upon an inflammatory state of the mucous membrane; but in other cases after death from purging, no inflammation can be discovered; and the person has been free from tenderness during life.

Chronic hydrocephalus illustrates these general remarks. In chronic hydrocephalus, there frequently is no sign of inflammation to be discovered; sometimes there is. Sometimes it is pure dropsy, independent of inflammation;—at least, there is no inflammation that can be made out; and it is a very slow disease. Sometimes the affection is connate;—born with the patient. Sometimes it does not appear before the first or second year; and it has continued during a tolerably long life. A patient has lived with dropsy of the head, till he had attained his fifty-fourth year. Gall and Spurzheim mention the case of a woman who arrived at this age, in whose head four pints of fluid were found; and the patient did not then die of

that disease, but of enteritis. When the water exists in this chronic form, its amount is sometimes very considerable. In the acute disease, where the effusion is the result of inflammation, there is seldom more collected in a child's head, than from two to six ounces; but in the chronic form it is frequently so considerable, that the bones separate, and the sutures and fontanelles do not close. Dr. Baillie, in one of his plates, represents the appearance of the skull in this disease. The fontanelles are much larger than they should be; and they sometimes acquire a very considerable size. The sutures may be found distinct;—each bone in some cases being separated. These are very common appearances; and such as any one may see.

There is nothing at all surprising in the circumstance of the sutures gaping, and the fontanelles spreading, when the water is collected, provided the bones have never cohered; but it is ascertained that the bones and sutures will open, after they have been firmly united together. Dr. Baillie, in the fourth volume of the "Transactions of the College of Physicians," mentions an instance of a boy, eleven years of age, in whom the fontanelles had closed, and the bones become well united by sutures; but in whom they all separated again. Mr. Ford, who was formerly an eminent surgeon in London, observed the same occurrence, in a boy nine years of age;—the bones separated six weeks before his death. I do not know that Dr. Baillie was aware of it;—but it is to be remarked that, in Mr. Ford's case, the serrated processes were much fewer than usual; so that the bones had far smaller points of contact, than they ought to have had; and seperation, of course, would be more easy. It is most probable that, if the water had collected in persons in whom there was the natural quantity of serrated processes, the bones would not have separated. I think that, in the instances I have met with of this affection, I have made the same remark as Mr. Ford; and such being the case, we can conceive that separation would be more easy. Until I read Dr. Yeats's book on Hydrocephalus (in which Mr. Ford's case is mentioned) I thought that Dr. Baillie's was the only instance on record.

In this disease, the fluid is almost always perfectly limpid;—it is generally as clear as the purest water. On being analysed, it is found to contain scarcely any salt, and scarcely any animal matter. When it collects to a very great amount, it is usually found in the ventricles;—the latter are therefore expanded, till the whole brain becomes like a bag. On removing the cranium, you find the brain spread out to a great extent, with the fluid collected within it; and, on making a section, you find that the brain is exceedingly thin;—not thicker than paper; and the fluid immediately gushes out. You see a large bag; and this led to the erroneous belief formerly entertained, that in this disease the brain was destroyed; as though the person had lived, eaten, and drunk, without a brain. However, although some made this assertion, and believed that a person lived and talked without a brain, others knew the contrary to be the case; and Morgagni reproaches those who published so absurd an opinion.

If the fluid be collected above the brain, and not in it, I know that then the mistake may easily be made; and it may be imagined that the brain does not exist. I was present at an inspection of this description, where a child had a very large head, and had evidently laboured under hydrocephalus. On removing the bones, cutting into the sac which contained this immense quantity of water, and letting off the fluid, there was nothing more to be seen. On looking into the membrane which contained the fluid, it was like looking into a well; there was nothing to be seen resembling brain; and it was immediately said,—"Here is no brain!" But as the girl had been eating and drinking, sitting up in bed and talking, like other children, till within a few days of her death, that was impossible; and we found the brain under all this fluid, perfectly sound. There was a large cyst which had existed upon the brain, and spread itself out in every direction, so as to produce an enormous size of the head; and there lay the brain, quite little comparatively, at the very bottom of this cyst. The distension of the cranium, be it ever so great, is generally equal in all directions; but now and then it is not so. Gall and Spurzheim say that they saw a learned and well-educated man, with a forehead so high that it must have contained three or four pints of water; while the rest of his head was not of an unusual size. The only effect in him was, that he very often fell asleep. Now and then, the bones of the internal ear become separated by the sac; so that deafness is produced. You will also observe another effect within the skull. The convulations of the brain being enveloped by the collection of water, there is an irregular pressure upon the supra-orbital plates of the frontal bone; and therefore there is not that roughness,—that irregularity which you see in ordinary cases. You know that the upper part of the orbital bone, consists of so many depressions and elevations; but in this disease, as the convolutions of the brain are enveloped by water, you will generally find the upper part of the orbital plates perfectly smooth. The bones are sometimes thickened; but in a great number of cases they become thinner than natural. Dr. Gall mentions, that the head of persons in whom this disease exists to any extent, is generally scurfy; and since I read the statement in his book, I have looked out for this circumstance, and found the observation to be correct. The skin of the head is generally scurfy, in one part or other, when the cranium is greatly distended. Occasionally the bones do not give way. There is no dilatation of the cranium at all; and it is said that it is even smaller than natural. I presume, in these cases, the bone cannot give way; and, of course, in such instances the brain must shrink; the bones, however, generally do give way.

The size of the head is occasionally enormous. There was in St. Thomas's Hospital, a few years ago, a child, named Elizabeth Phillips, who was born with a head as large as that of a child seven months old. The bones were all distinct; her hair was scanty; and there was an abundance of scurf on her head. She was fat, and as

lively as other children of her age; and there was no symptom indicating the existence of fluid, except the size of her head. Though she was only eleven months old, the circumference of her head was twenty-seven inches five-eighths; from the top of the nose to the occiput, it was twenty-two inches; and from ear to ear, across the top of the head, it was seventeen inches one-eighth. When you consider the age of the child, the measurement was enormous. A few years ago, there was a poor man in St. Thomas's Hospital, who has now become a celebrated character; in consequence of a cast of his head having been deposited in almost every museum. His head was thirty-three inches in circumference; twenty-two inches from ear to ear; and twenty-three inches and a half from the nose to the occiput. He was thirty-three years of age; and his cranium was ossified at the sutures. Of course the bones had separated originally; but fresh bone had afterwards been deposited in the membrane between the frontal, occipital, and temporal bones; so that he had as perfect a cranium as any one else. In him there were found as many as ten pints of water;—nine pints on the brain, and one pint in the lateral ventricle; and what was curious in him was, that the corpus callosum was split by the distention. An opening existed in the posterior part of the falx; through which the water (in all probability) had passed from within to without. I say,—"in all probability;" because, in a great number of cases, the water is contained in the ventricle; and it is probable that, in this instance, it had made its escape. His brain only weighed two pounds, fourteen ounces and a half; whereas the water in and upon the brain, amounted to ten pints. Andral mentions that water has been found in the fifth ventricle. I believe it is sometimes rather a quirk to ask where the fifth ventricle is situated; but there is a little space which may be called the fifth ventricle; and Andral says that Broussais has found dropsy even of the fifth ventricle.

In this disease, the mind is generally weak. Sometimes there is downright idiocy; but, as the brain is only expanded, and not destroyed, there is occasionally considerable mind. Cardinal (the man at St. Thomas's Hospital) had occasionally epileptic fits: and his mind was certainly weak. He prided himself on being able to say "the Belief;" but he generally stumbled when he got to "Pontius Pilate." If he were asked his duty towards his neighbour, he got on pretty well at first; but he soon made a trip; and it was also observed that his memory was not like that of other people. He was an idiot;—at least, he was what is commonly called a soft kind of person. He was also exceedingly vain, and pretended to have violent sexual desires; and, notwithstanding his great big head, he used to try to get hold of the nurses; so that one day we heard he had been behaving very badly;—and then he would say "the Belief" to you. He could talk, of course; but being top-heavy, and having thin spindle legs, he did so with the greatest caution, lest he should overbalance himself. Now and then, if he was not delirious, he was so ill tempered, that we could scarcely manage him.

It is right, however, I should mention, that this disease may exist when there is no brain. Dr. Gall asserted at first, that when there was water in the head, the brain was always present; but he corrected this statement, in a subsequent edition of his work; and acknowledged that people were sometimes formed without a brain. In fœtuses, where there has been nothing but the medulla oblongata, they have sometimes had water in the head instead of brain;—not that the brain has been destroyed by the water, but it has been deficient by original formation; the fœtuses have been monsters. In these cases there are generally no marks of inflammation; but you will generally find, at last, that there is irritation. You will find the vessels of the head enlarged, and the head itself hot. The person has more or less feverishness, and emaciation occurs; which, in the course of a year or two, is generally followed by death. In the greater number of cases, this is the course of the affection; but you see other cases where no such thing occurs. In Cardinal, there were no signs of inflammation at all. He ate and drank just like other people.

You will find, in the "Edinburgh Medico-Chirurgical Transactions," Volume I, a case recorded, in which a female child, only seven months old, had a head which measured twenty-nine inches and a half in circumference; and from which there were let out, after death, two hundred and thirty-six ounces of perfectly clear fluid; such as is usually found in chronic hydrocephalus. This fluid was contained in a bag; but then the brain was split in two. Of course you know that, when the brain is first formed, it is not in one part; but that it afterwards unites;—just the same as the portions of the lips. The portions of the lips, however, do not always cohere; and precisely the same occurrence takes place with regard to the brain; so that it remains divided;—and the whole of the ventricle forms a continuous bag with the arachnoid, and the surface of the brain. In the case to which I have just referred, on opening the head, a ventricle was seen at the bottom; simply from the brain not having united (as it should have done) in the progress of the formation of the body. This was merely a case of hydrocephalus;—water in the ventricle; the ventricles not having united, as they ought to have done. The rest of the brain was at the bottom. There is, however, a very curious instance mentioned, of the actual rupture of the brain. In the case recorded in the "Edinburgh Medico-Chirurgical Transactions," there was a deficient cohesion of the brain; but in the eighth volume of the "Medico-Chirurgical Transactions of London," a case is mentioned where, in this disease, there was so great a distention of the brain, that at last it actually ruptured. Both the brain and the membranes gave way, under the posterior fontanel; and an external swelling was seen to be produced; so that the whole head became œdematous; and fluid oozed from the mouth and nostrils, for eleven months. The child lived that period, after the giving way of the brain, and even of the dura mater; but of course the rent must have been very local.

In this disease medicine, I believe, is perfectly useless; but still mechanical means have been found very beneficial. If a puncture be made, and a large quantity of fluid let out, the child may die very suddenly,—almost immediately; but if a minute puncture be made, and a small quantity only let out at a time, it may be done with perfect safety, and the head has been known to be reduced; but I do not recollect having read of a cure till lately. I never saw a case of this kind; but it has been said, very lately, that some cases have been cured by a puncture being made; and a certain quantity only of fluid let out at a time.* Another mechanical means, also, has been of very great use; as I have, in some degree, witnessed myself;—that is, bandaging the head. It should be bandaged nicely, so as to have a uniform pressure throughout. I believe it was Sir Gilbert Blane who first suggested, or first attracted particular notice to this remedy. He has published some cases where, if there was not complete success, yet very great benefit was derived from the plan. I rather think it is said that some cases have been cured by bandaging. Some surgeons, instead of applying bandages, have employed adhesive plaster, so as to confine the head; and this has answered still better. The only case in which I have had any experience of this, was at St. Thomas's Hospital, in the child of an Irish woman. I directed the head to be bandaged; and it not only became smaller, but the general health was very considerably improved;—indeed, more so than the head. Unfortunately, the bandage was neglected; and the child immediately grew worse. The bandaging was again attended to particularly, and the child again improved; but I do not know the result of the case, because the mother took it away. Supporting the body, and pressure of the head by means of equal bandaging, appear to be the proper means of treatment; and, I presume, after letting out a certain portion of the fluid, it would be well to employ bandaging;—thus carrying on the two plans together.

I mentioned that, in this disease, the brain is not destroyed;—that the convolutions are merely expanded, and the ventricles dilated; and, therefore, you are not to be at all surprised that the mind exists. Persons may be expected to be a little weak, on account of something being in the brain; but nothing more. There is a case, however, mentioned by the present Dr. Heberden, in the "Transactions of the College of Physicians," in which a chronic accumulation of water occurred in a man eighty years of age. At least eight ounces of fluid were found in one ventricle, and four ounces on the brain, after death. There was some little organic disease about the plexus choroides;—a solid tumor of calcareous matter; together with ossification of the basilar and internal carotids, and their chief branches. Now this man, although twelve ounces of fluid were found in his head after death, had suffered

* Dr. Conquest, to whom the profession is much indebted for his able and enlightened proceedings in this matter, has since published some very satisfactory cases.

nothing,—except that he had been deaf many years (which many persons of eighty are) and had vertigo once or twice,—till six weeks before his death; and then he had a fit, from which he quite recovered; and was perfectly well, before he died. This shews how nature will accommodate herself to an inconvenience, if it come upon her gradually. There is a singular circumstance mentioned by Morgagni. A considerable quantity of water pressed on the brain;—so much, that had it taken place suddenly, death most probably would have occurred; but from its taking place very gradually, no further mischief was produced.

CONVULSIONS.

The acute convulsions to which children are liable, are much allied to hydrocephalus acutus; and frequently require to be treated in the same way. Children, as you know, are very liable to epileptic fits and regular convulsions; from irritation of the bowels, teething, and other circumstances. Now these will sometimes depend upon the mere circumstance of teething; and cease if the gums be lanced. Sometimes they arise from the intestines, and are cured by purging; so that other antiphlogistic measures are not required; but sometimes they depend on, and are connected with, an inflammatory state of the head; and after death you find the same appearance as in hydrocephalus;—at least you find that the lining membrane of the ventricles, is as red as a piece of scarlet cloth.

The treatment of convulsions (if you cannot discover in the gums or intestines an exciting cause, which it is in your power to remove) should be, if the pulse will justify it, the same as for hydrocephalus. You must take blood away freely, give mercury, and put ice on the head. But it is necessary here to make the same diagnosis that you do in hydrocephalus. These convulsions may be connected with debility, with a weak pulse, with paleness of the face, or with only a transient flushing of it; and in such cases as these, you may expect that assafœtida, or a small quantity of laudanum, or ammonia, may answer a good purpose. In these cases of convulsions, cold affusion has frequently been attended with very good effect. In the work of Dr. Currie on Cold Affusion,—a sort of classical work in medicine, and well worth reading,—he mentions several cases of convulsions in children, where they ceased immediately on the sudden application of cold water. Now if these convulsions had arisen from an inflammatory state, the effect would not have been of this kind. You cannot cure inflammation by merely throwing cold water on a patient. It is clear that the convulsions of children may frequently arise from irritation, not within the head, but connected with a distant part; but if there be an over-fulness of the head in particular, or of the system at large, without marks of inflammation, or still more *with* marks of inflammation, it is not right to trust to any thing but the common antiphlogistic remedies vigorously applied.

As to the *chronic* convulsions of children, these are allied to epilepsy; and must be treated in the same way.

SPINA BIFIDA.

There is sometimes a collection of water low down in the spine; and a tumor is formed externally. From the bone being generally deficient and the spine gaping, the disease is called *spina bifida*. This, like the accumulation within the head, is sometimes congenital;—born with the child; and sometimes it is not. Sometimes a collection of water will exist with a sound spine; and sometimes the spine is bifid.

There is a tumor produced,—sometimes more than one; and generally the tumor is situated at the lower part of the spine;—that is, in the loins. The higher the tumor is situated, the more rare is the case. These tumors are of all sizes; from merely a little elevation of the skin, to the size of a child's head; and sometimes the tumor is diffused. Sometimes it is very prominent; and sometimes it is both diffused, and exceedingly prominent. It is also of all shades. The skin externally is seen in all conditions. Sometimes it is healthy; sometimes it is very thick; sometimes it is inflamed; sometimes it is gangrenous, ulcerated, and fistulous; and sometimes I have seen it very hairy. The subjacent membranes are likewise found in all sorts of states. Sometimes the membranes are diseased, while the skin remains healthy. The fluid which is contained in these tumors, is exactly like the fluid of hydrocepalus;—for the most part, exceedingly limpid, like rock water; and its quantity varies, from a few ounces to six or seven pounds. It will exist sometimes in the arachnoid, sometimes between the arachnoid and dura mater, and sometimes between the arachnoid and the pia mater;—that is to say, it will exist in the arachnoid on either side; and it will be found between the dura mater and the bones. It has even been found in the canal which, you know, runs along the medulla spinalis. When there is a deficiency of bone, there is sometimes a fissure all the way through; from the cervical vertebræ, down to the os coccygis. That, however, is very rare. Sometimes it runs from the last cervical vertebra, down to the beginning of the sacrum; or it exists only in the loins. The latter is a common occurrence. The deficiency is sometimes a mere slit; sometimes there is an imperfect evolution of the lateral arches of the bones; and sometimes there is even separation of the body of the vertebræ also.

Besides this variety as to the state of the integuments, as to the state of the membranes, as to the situation of the water, and as to the condition of the bones, there is a great variety also, as to the situation of the spinal marrow. Sometimes it is precisely in its natural place; sometimes it runs outside the tumor; sometimes it is distributed upon the sac; and sometimes it has been seen deficient in the affected part. It has been noticed by some, that club foot frequently co-exists with this affection. You know when there is a species of monstrosity in one part of the body, it is very common to find a defect in another; if an important part, such as the heart or brain, be deficient, it is very common for other parts to be malformed. In this disease, then, club feet often co-exist; but very

frequently they do not; because they are only minor deviations from the natural structure of the body. I recollect an instance of a child having this disease, where the tumor was situated on the loins, and was surrounded by a considerable quantity of hair; and there were club feet; but the tumor ceased spontaneously. No measures were resorted to, for the best part of a twelvemonth; although, when the child was first born, there was the appearance of ulceration, and even gangrene. The disease, however, entirely disappeared; the surface became flat; and hydrocephalus commenced, of which the child ultimately died.

With regard to the treatment of spina bifida, I need not make any remarks. Medicine is of no avail in it; but cases have been much relieved, if not cured, by puncturing, and by the careful application of a bandage;—exactly the same treatment that has succeeded in hydrocephalus. The part is frequently in a state of gangrene, and then no treatment can be borne; but when the employment of remedial measures is admissible, they are entirely mechanical, and therefore devolve on the surgeon.

DELIRIUM TREMENS.

I now proceed to speak of a disease which resembles, in many of its symptoms, inflammation of the brain; and yet, in a great number of cases, it would prove fatal, if treated on the common principles applicable to phrenitis. The disease to which I allude is called *delirium tremens*; which is rather an improper term, because the delirium cannot tremble. It would be better to say, *delirium cum tremore*; but it has derived its name from the patient being in a state of agitation, and being delirious. I speak of it now, because it may be readily contrasted with the delirium of phrenitis, arachnitis, and hydrocephalus acutus; of which I have already spoken.

This state of delirium with universal tremor, is rather the effect of morbid irritability than of inflammation. It is such a state as occurs in fever, when delirium exists. It is very much the same condition, as that which recurs after great loss of blood; in which there is headache, vertigo, and a disturbance of the mind. It is just such a state, as frequently takes place after active inflammation of the brain. When the last stage of phrenitis has arrived, the patient will fall into a state of irritation of the brain, which resembles delirium tremens.

As the disease is, for the most part, one not of *inflammation*, but of *irritation*, the face is not flushed, but pale. You will recollect that, when I spoke of that state in infants which is frequently mistaken for arachnitis, and in which stimulants are proper, I mentioned that the face is not flushed, but pale; or that if it be flushed, it is only transiently. Now in this disease the circumstances are quite analagous. The eyes are not red, and there is no intolerance of light and noise;—at least nothing worthy of being mentioned, compared with what is seen in phrenitis; and frequently there is none whatever. The tongue is generally neither dry, brown, rough,

nor white, as it is in inflammation; but is usually moist, and covered with a creamy mucus;—covered all over with a white soft mucus. Generally there is no great heat of body; and the skin is not dry, as in most inflammations; but is covered by a profuse sticky, clammy perspiration; and sometimes this is of an offensive character. If the perspiration be clammy, of course it is a morbid secretion. It is secreted in a morbid state, or it would not be clammy; and if it be secreted morbid as to *consistency*, it may be secreted morbid as to *smell*; so that the perspiration is not only clammy, but offensive. This is a very common occurrence. The pulse is quick;—a circumstance which you may expect under simple *irritation*, as well as under *inflammation*; and at last it becomes very rapid; but it is neither full, nor hard. At length, as in other diseases, the pulse will become fluttering;—what is called by some writers, *pulsus vermicularis*;—like the undulation of a worm. There is constant watchfulness in the disease;—the patient can get no sleep; and there is constant delirious talking. He is constantly endeavouring to get out of bed, and out of the room; but you may easily induce him to lie down in bed, or lead him back to it, if he have escaped. There are no violent efforts in the disease;—no such efforts as are seen in delirium ferox; but he is everlastingly chattering, and everlastingly restless; so that he will go on talking, and trying to get out of bed. He will sit up too in bed;—constantly moving his hands and arms backwards and forwards, but not violently; and then, in the midst of all this, he tries to leave his bed. The delirium generally respects imagined wrongs; and an imagined unfortunate state of private affairs. He fancies that his affairs are in a dilapidated state; and that different persons are endeavouring to injure him. There is this extraordinary extravagance about imagined wrongs, and deranged affairs, rather than any preposterous hallucination. There is, of course, great anxiety occasioned by the patient dwelling on these topics. You may excite the attention of the patient to what you wish, for a moment; but a moment afterwards, he has forgotten what the subject was. His ideas roll off again to another subject; and he forgets what he had been talking about. There is no spite,—no malice in this disease; the patient does not attempt to injure those around him. The whole body is in a state of tremor; and the tongue among other parts. There is great debility;—it is a disease attended with extreme weakness; and, of course, there is loss of appetite. There is likewise a catching of the tendons;—called *subsultus tendinum*; and a picking of the bed-clothes. It is common, in celebral affections attended with dilirium, for a person to be catching at something which he imagines to be before him; and now and then there is hiccup.

The attack is sometimes very slow, and sometimes very sudden. If it come on slowly, there is at first anorexia, loss of appetite, and want of sleep at night; besides which, the patient is restless during the whole of the day;—fidgety, and plaguing people about him with his own matters. The eye, at the same time, is observed to be dull.

It is a disease which occurs in adults, and not in young subjects; except in affections which I have already mentioned as analogous to this. It generally occurs, too, in adults who have been addicted to dram-drinking;—not *always*, but *generally*. It is said to have appeared sometimes after acute rheumatism, sometimes after scarlet fever, sometimes after typhus fever, sometimes after injuries of the head, and immediately after apoplectic and paralytic fits, and sometimes after long continued exposure to lead; but the most frequent circumstance producing the disease, is a continued habit of dram-drinking.

The diagnosis of the disease, therefore, appears to be made out from the weakness of the pulse; the want of violence in the patient; the want of a flushing in the face, and redness of the eyes; the want of furious delirium; the want of sleep; the circumstance of the patient being in a state of tremor of the whole body; with a tongue not dry, but covered with a creamy mucus; with a skin not dry, but sweating profusely; the circumstance of the patient talking incessantly about his own affairs,—about some imagined distress; his attempting to get out of bed; and his being everlastingly restless, but easily managed and laid down, or brought back to bed.

The remedy for the disease is opium, in full and repeated doses. One or two grains is not sufficient. It is necessary to give from three to five grains; and to repeat these doses according to circumstances. In some cases, it is necessary to give five grains every six or eight hours; and you must continue it till sleep is procured. Three grains would be a proper dose to begin with; and while the patient continues well, it need only be given in small doses; but full doses must be resumed when the symptoms return. The first book written on this subject, was a little Treatise by Dr. Sutton, of Greenwich. He says he learned the practice in Kent; where there is a great deal of the affection, on account of the people being so addicted to dram-drinking. Smuggling is carried on, to a great extent, on the east coast of Kent; and the people therefore drink to great excess; and delirium tremens consequently prevails extensively. He found eminent practitioners adopting two different modes of treatment;—the one antiphlogistic, and the other narcotic; and he soon saw the superiority of the latter. I believe I mentioned, that I was sent for to a case, which had been phrenitis, and properly treated as such; but then it was delirium tremens. The patient's pulse was rapid and soft; his tongue not dry, and his body not hot; but there were delirium and tremor. Four grains of opium were sufficient to send him to sleep; and he awoke almost well. This treatment of opium, which requires to be backed by good nourishment, is the same that should be adopted after profuse hæmorrhage, and after the spurious form of hydrocephalus, if I may use the expression;—that state of the system, which resembles hydrocephalus in appearance only. It is also the treatment we should adopt in delirium mitius; and wherever there is great irritation of the brain with debility.

Recovery from this disease, under the opiate treatment, is very frequent; whereas, under any other, patients continually die. However, the affection will cease spontaneously, like almost any other complaint. It lasts, in general, from three days to a week; and patients may then sink gradually, or pretty suddenly; or, at the end of that time, they may recover; but it is rare. Now and then, it has been known to be followed by apoplexy or mania. I recollect seeing a case of this description, which terminated in complete mania. If the disease yield under the use of opium, the opium may be continued twice a day, for some little time, and then relinquished slowly; just as the symptoms of the disease decline.

Some writers have recommended a gentle ptyalism to be produced; and some, notwithstanding the profuse sweat, have advised cold affusion. I have no experience of either of these modes. Good food undoubtedly is necessary; and sometimes it is found requisite to indulge the patient with drams. In all cases where patients have acquired bad habits, from the great demand made upon the system after an operation or an accident, you must indulge them. The system has become accustomed to them; and without them it cannot conduct its affairs; and we must allow drams, or any thing else that has become a bad habit. However, good food is generally necessary; —beef-tea and milk. Slops the patient cannot take.

Notwithstanding, however, that this is the frequent and most common character of the disease, you must remember (because I know it to be a fact) that the disease is not always of this nature. You may have patients with this mild state of delirium, easily led back to bed, easily put down in bed, and trembling from head to foot; with the tongue in a state of tremor too; and yet inflammation may be present, requiring to be treated as you would treat phrenitis. You will find, in such a case as this, sufficient signs to point out that it is a disease, not of irritation merely, but of inflammation in some degree. The patient will be more or less flushed; his pulse more or less full and firm; and the delirium will be rather violent. I have seen cases deserving to be called delirium tremens, in which the patient was trembling, talking about his own affairs, believing that he was an injured person, easily led back to bed, with a moist skin and a moist tongue; and yet this disease was not benefitted by opium, and was not cured till bleeding and starvation were had recourse to. It is therefore necessary you should remember, that you are not to prescribe for a name, but for the condition of the patient. There may be delirium tremens; but it may be accompanied by more or less flushing of the face, a pulse more or less full; —and a pulse that will justify you, if not in bleeding, yet in purging;—at any rate, in abstaining from opium. Antiphlogistic treatment is sometimes required in this disease; but usually it is only required in moderation; and there may be cases where it is perfectly right to employ moderate antiphlogistic treatment, and to give opium also. You may throw in opium; but it will be fruitless, unless you adopt some antiphlogistic measures. You must keep the head cool;

and for this purpose ice is the best thing. You may also apply leeches. It is said by Dr. Latham, whose experience must be greater than mine, (for I only see cases now and then), that blisters are always bad in this disease; and he says that, in decided cases of the affection, although it may have come on after apoplexy, opium is equally useful, provided it is a proper case for opium. The circumstance of the affection coming on after apoplexy, does not prevent opium from being equally proper;—that is, if the delirium do not arise from inflammation, but from mere irritation. After inflammation of any organ whatever, when you have put antiphlogistic treatment in force, opium is proper. I mentioned, in speaking of inflammation, that when you had pulled down the powers of the patient, and knocked down the disease, opium answered a good purpose, because a state of irritation was likely to come on; but if you gave it before, you would be likely to do harm by it. This disease has nothing peculiar in it; it is merely an instance of a general state of irritation. Opium is found useful in irritation of almost all the various organs of the body; provided no inflammation exists, or that any which does exist, has been knocked down by proper treatment.

It is said that, after death, a little congestion may be found in the head; and sometimes a slight effusion. The work of Dr. Sutton is short and excellent; and it will be worth the while of every gentleman to read it, when he has leisure.*

TETANUS.

This disease may not have its source exactly in the head, but in the spinal marrow. I am, however, an enemy to all strict arrangement; and therefore I shall speak of it, and all other diseases of the spinal marrow, at the same time that I speak of those of the head. The head contains the chief part of the nervous system; and it is more convenient to speak of diseases of the nervous system at large, when speaking of the head, than to divide them, and speak of them at distant intervals.

The name of the disease I am now about to consider (tetanus) is derived from the Greek word τεινω, *to stretch*; in consequence of the great stretching and spasm that there is in this disease. There is a constant rigidity in this affection;—a contraction of certain voluntary muscles; but although there is constant rigidity and contraction of many voluntary muscles, not alternating with relaxation, yet there is a much more violent contraction at one moment than at another. There is a *constant* contraction of the muscles affected; but they are not constantly contracted to the *same extent*. There are *paroxysms* of spasm, as well as *constant* spasms; and the paroxysms are more frequent, and also more violent, in some cases, and at some periods in the same case, than in others. Synchronous with these violent spasms, there is violent pain; and the muscles so affected by spasm,

* "Tracts on Delirium Tremens, Peritonitis, and some other Internal Inflammatory Affections; and on Gout; by Thomas Sutton, M.D."

are always very hard. There is one extraordinary case mentioned by Sir Gilbert Blane, of a man in the navy who had tetanus; and, instead of experiencing a violent agony from the spasm, he had nothing but pleasurable sensations. It is considered a very extraordinary case; and the disease could not be trifling, for he died on the fourth day. I do not believe that Sir Gilbert Blane saw the patient himself; but he relates the case on the authority of a surgeon in the navy.

These painful spasms chiefly affect the muscles of the lower jaw, of the neck, and of the trunk. When they affect the jaw, that variety of the disease is called *trismus*. When the spasms are such, that the body is drawn backwards and arched (the arch being *forwards*, and the whole body drawn *backwards*), it is called *opisthotonos*. When the body, on the other hand, is drawn *forwards*, it is denominated *emprosthotonos*. And if the body be drawn to one side, then it is termed *pleurosthotonos*. Trismus and opisthotonos are the most common. Sometimes the spasms affect the muscles of the extremities; but in general they do not; and the fingers are often flexible to the very last; while the trunk, the neck, and the jaw, are in a state of the utmost rigidity.

The muscles of the face are affected; and the consequence of this is, that the brow becomes very much corrugated. The corrugator supercilii of each side suffers in the spasm, and the other muscles of the face are affected; so that the angles of the mouth are drawn up into an agonizing expression; and the patient is compelled to a wretched grin; which is, no doubt, greatly increased by the agony which the patient suffers. The nose is drawn up; and the eyes are fixed, staring, and startling. The tongue is continually protruded during the patient's sleep, if the jaw be not completely closed; and when it is protruded, spasms continually affect the masseter and temporalis muscles; so that the jaws snap, and the tongue is caught and wounded. The diaphragm, too, is greatly affected; on which account there is a catching of the breath, and violent pain at the end of the sternum. At any rate, these spasms produce a catching of the breath; and, I presume, the pain at the end of the sternum arises from the same source. From the spasmodic state of the abdominal muscles, the abdomen is extremely hard. The recti muscles are seen prominent in all their departments. The belly swells out; so that the abdomen is exceedingly hard and rather arched. It appears, in fact, as if it were boarded over;—it is as hard as a board. The least motion, or the least attempt at motion, frequently excites these violent spasms; so that if the patient attempt to move in bed, violent spasms follow. The sphincter ani sometimes seems to be violently contracted; so that a clyster cannot be given. This, however, is not invariably the case. From this violent muscular action, there is great heat and great sweating. Dr. Fribo, of Geneva, found the temperature of the body 110 degrees in the axilla. In this disease the pulse is quick, exactly in proportion to the severity of the affection. It is much quicker at the moment the spasm is aggravated,

than at any other time. The first symptoms of the disease, generally shew themselves about the neck and tongue. Usually the first symptom of which the patient complains, is a difficulty in mastication and deglutition; and then there is generally a slight stiffness about the back of the neck.

The course of the disease is various. Sometimes it proceeds very rapidly, and sometimes very slowly; so that it may last only one day;—destroying life in twenty-four hours; or it may last many weeks. It frequently kills before the fourth day; and when it does terminate fatally, it generally proves so before the ninth day. As to duration, Dr. Parry mentions that a horse attacked with this disease, did not die before the eighteenth day of seizure. When a patient dies, it is either during the violence of the paroxysms, or from being completely exhausted. The mind is usually quite unaffected, except sometimes towards the last. It is common to almost all diseases, for the mind to become slightly affected. The bowels, in this affection, are always costive. If the patient recover, it is generally by a very gradual cessation of the symptoms; and the disease lasts from two to four weeks, and sometimes six or eight. It is from these long-continued cases, that recovery usually takes place. It now and then, of course, remits; and then again it is aggravated.

After death, in most cases, nothing is found; and therefore the morbid appearances which are sometimes found, are not *essential*, but *incidental*. Occasionally, I know, you will find inflammation of the spinal marrow; but sometimes (and I cannot but fancy I have seen instances of it myself) the congestion so common about the spinal marrow, when the body lies long, has been mistaken for inflammation of the spinal canal. In the ordinary position in which dead bodies lie, the blood gravitates towards the spine; and if the body be not soon examined, and the weather be hot, you may expect great redness of the spinal membrane from the blood effused there; and yet there may be no inflammation. When, however, you consider that, more frequently than not, there are no signs of inflammation, one cannot but conclude that, although inflammation of the spinal marrow may sometimes give rise to tetanus, yet the disease is not necessarily the result of inflammation of that kind.

All I can venture to say as to the nature of the affection is, that it is a peculiar state of that part of the nervous system from which the nerves spring; or (if that be an improper expression) of that part in which they *terminate*;—that part of the brain or spinal marrow, which is immediately connected with the nerves of the voluntary muscles. What that state is, I cannot pretend to define; but that is the situation of the proximate cause, I have no doubt. The mind is entirely unaffected in the disease; and so is sensibility. It appears to be an affection of the voluntary muscles, through the medium of the voluntary nerves; and of the voluntary nerves, I presume, through those parts of the brain and spinal marrow, with which they are connected.

The predisposing causes of the disease are, in the first place, hot

climates and hot seasons. The disease is far more common in hot climates, than in temperate ones; and more common in hot seasons, than in those which are mild. It appears that, in hot climates and hot seasons, it prevails most from the want of ventilation, the want of good food, the want of comfort, and the want of attention to the bowels. On this account it is much less frequent in the army and navy now, than formerly. Dr. Lind says that, in the West Indies, at the end of the former war, five cases of amputation out of six proved fatal, through the occurrence of tetanus; but Dr. Dickson, physician to the Fleet, (in an article published in the seventh volume of the "Medico-Chirurgical Transactions") says there were not under his care in the West Indies above six cases of tetanus arising from amputation, for upwards of seven years. He ascribes it to the improvement in the treatment of sailors, both in sickness and in health; and to their having more comforts, and being less exposed to noxious causes. Dr. M'Arthur, of the Naval Hospital at Barbadoes, says that only two cases occurred there, in the course of six years; and yet there were many wounds, and many amputations during the war. This is another instance of the effect of external circumstances, upon the existence and severity of various diseases. Fever prevails most amongst those who manifest a want of cleanliness; and so it is said do cholera and typhus. But diseases very dissimilar to each other, will be predisposed to by a want of comfort; for the more the comfort of the body is attended to, the less is the influence of all noxious agents, and noxious circumstances.

Males are thought to be more disposed to the disease than females; but this is not proved; for males are more exposed than females to the exciting causes of the complaint. It is also thought that the strong and muscular are more liable to it than the weak; but whether that is really the case I do not know; for I have seen a great number of instances of tetanus, in persons of all sorts of constitutions, both strong and weak. It is supposed to occur particularly in young adults; but it occurs also, in the West Indies, in infants. Children there (though now less frequently than formerly) die of locked jaw; so that one variety of the disease is called *trismus nascentium*.

Among the exciting causes of the disease, is to be mentioned cooling when the body is hot;—sudden refrigeration; but the most common is a wound; and (what is singular) it is wounds of the hands or feet, that most frequently cause it; and among wounds of the hands and feet, it is wounds of the fingers and toes, that most frequently cause it; and among wounds of the fingers and toes, it is most frequently wounds of the thumbs, and of great toes, that produce it. Every wound has not an equal tendency to produce tetanus; for contused wounds much more frequently occasion it than any other. A wound will sometimes not produce the disease, till the person is suddenly exposed to cold; and then he will have it immediately. This is a similar occurrence to what I mentioned regarding ague; namely, that a person may be exposed to the causes of ague, and yet the disease will not appear, until he is exposed to cold and wet. The

cause then becomes efficient. So a wound will frequently not produce tetanus, till another cause of the disease takes place;—sudden refrigeration; and then the affection makes its appearance. The reverse, however, of this sometimes happens. The person is exposed to wet; but the disease will not shew itself, until a wound takes place.

It occurs in all states of the wound;—in healthy and unhealthy wounds. Sometimes it appears when the wound is nearly healed; and sometimes when it is perfectly healed. It occurs, too, whether the wound be large or small. I had a case of tetanus, as severe as any I ever saw, where there had been merely a contusion of the thumb. There was no pain,—no irritation. The nail was separated and loose; but under it, all was dry. No secretion was going on; and there was no irritation to be found; and yet that contusion of the thumb produced the disease. There is a case mentioned in the "Transactions of the London Medical Society," in which the disease occurred after a burn; at the time when there was merely a dry scab on the leg, and no inflammation around it: nay, the disease has sometimes declined and ceased, while the wound every day grew worse and worse. I had a case of tetanus from compound dislocation of the great toe; in which the disease declined, and ceased, while the pain continued in the foot. Inflammation and suppuration went on, accompanied by great suffering; and yet the disease was declining all the time. The trismus nascentium,—the lock-jaw of new-born infants, has been ascribed to the state of the navel;—to the condition of the parts connected with the umbilical cord; but it appears that it is greatly disposed to by the unhealthiness of the circumstances, in which the children of the West Indies are placed.

As to the period of a wound at which the disease may occur, Sir James M'Grigor says that it appeared, from his immense experience in the Peninsular as army surgeon, that a person wounded was safe, as it regarded tetanus, if the disease had not begun by the twenty-second day after the infliction of the wound. But Sir Gilbert Blane (who had, if not *equal*, yet very *great* experience in the navy, many years ago) says, that he has seen the disease occur at all periods of a wound, between the second day and the end of the fourth week. Sir James M'Grigor found the twenty-second day the limit; but Sir Gilbert Blane has seen it up to the end of the fourth week, from the time of the infliction of the wound; so that a person is not safe, according to him, even if he have passed the twenty-second day. Dr. Parry mentions seeing a horse seized with the disease on the thirtieth day. I may mention that tetanus is not only common in horses; but that lambs are affected with it, if their ears be bored with a red-hot iron to check the rot. It has been said to arise, frequently, from worms in the intestines.

As to the diagnosis, in almost every case you observe that the tongue is bitten. Before the mouth is completely closed, and the patient falls asleep, the tongue is protruded by the spasms. The

spasms affect the entire set of muscles; and therefore you may expect, in most cases, a biting of the tongue. A second symptom, very characteristic of the disease, is the pain at the scrobiculus cordis. It is a pain not increased by pressure; but a sudden, violent, sharp, stabbing pain. It may be more or less constant; but at periods it is exceedingly severe. Then, again, you have a peculiar swelling and rigidity of the muscles. It is spasmodic; but *constant*, not *convulsive*. It is what they call a *tonic* spasm; not a spasm alternating with relaxation. Then, again, you observe the peculiar posture into which the body is drawn;—opisthotonos, emprosthotonos, or pleurosthotonos; and in trismus you find the jaw to be closed, or nearly so, without any inflammation around, and without any organic disease to account for it. There is no terror in this disease; —no excitement of the mind;—no morbid corporeal sensibility; as there is in hydrophobia. We shall see that, in the last-named affection, there is excessive terror;—excessive excitement of mind;—a great sensibility to external sensation; so that neither noise, nor light, nor a sudden draught on the body, can be borne; but in tetanus, although the patient is miserable enough from the agony, yet there is no *mental* distress;—no terror of mind; neither is the body extraordinarily sensible to external applications. As to rheumatism, when that occurs, it chiefly takes place in the joints, and not in the bellies of muscles; or if it do, the joints are affected likewise; and there is no spasm, but a difficulty of motion, and great pain when the patient moves; and many joints are frequently affected at the same time. As to the distinction between a locked jaw and rheumatism, you will observe that, in the latter, other joints are most probably affected. You may find the jaw stiff; but there is violent pain flying from one part to another; and the patient is not subject to a snapping of the tongue. In rheumatism, too, there is generally tenderness in some part of the jaw; and generally there is a great deal of heat, as well as constant pain. Tetanus, more especially trismus, is very frequently hysterical; but this occurs, in ninety-nine cases out of a hundred, in females; and there are other hysterical symptoms;—such as globus hystericus, great flatulency, and irregular convulsions. If hysteria be present, and you see trismus, or any other form of tetanus, you may take it for granted that it is an hysterical affection altogether. I mentioned, when speaking of ague, that tetanus sometimes occurs during that affection, particularly during the cold stage; and I presume it is not dangerous. The utmost that I have observed, is a constant tonic spasm of the arm;—that is to say, I had two patients under my care, whose hands were clenched during the cold stage. Narcotics sometimes have occasioned this disease. A tobacco-clyster will sometimes occasion it; but it is strytchnine, more particularly, that has this effect. In these cases, if you knew that poison had been swallowed, you would ascribe it to that; but if a narcotic had been taken, I presume in most cases, in addition to the tetanus, you would find some other symptom present as well.

The prognosis, in this disease, is always bad; unless it be a sympathetic affection. If hysteria be present, or if the disease have been produced by a narcotic, the prognosis will not be so bad; for the narcotic will frequently be got the better of. In such circumstances, the prognosis is very various. If, however, the disease be what is called *traumatic* (arising from a wound), or if it be occasioned by worms in the intestines, few persons recover from it. But every description of tetanus, whatever be the cause from which it occurs, may be recovered from. Dr. Parry says, on the subject of prognosis, that if the pulse be not above 100, or 110, up to the fourth or fifth day, patients almost always recover; but that if the pulse be quicker early, the disease almost always proves fatal; and that there have been but very few recoveries, when the pulse has been 100 the first day. There is less danger in proportion to the length of time which the disease lasts. If you be called to a case which has lasted some time, your prognosis may be favourable.

As to the treatment, if the wound be inflamed, or if there be any internal inflammation, or if there be fulness of the system, undoubtedly one would bleed. It is said that enteritis sometimes exists in the disease; but I have not seen it. You are not to imagine, that because the blood flows freely, the patient must be benefited by blood-letting; because, while there is such violent action of the voluntary muscles, the effect must be the same as that which we every day procure in common venesection, by making a person contract his hands, so that the muscles may press on the internal veins. When all the muscles are in a state of violent spasm, as is the case in tetanus, you may expect that the circulation will be irregular;—that a great quantity of blood will be forced to the superficial veins; and consequently that the blood will flow freely; and bleeding is not at all useful, unless the wound is inflamed, or there is some decided internal inflammation, or the patient is clearly in a state of plethora.

Purgatives are often useful, especially in the case of children, when they are labouring under trismus nascentium. I believe there is benefit, in general, from clearing out the intestines well; and some cases have done well under the use of purgatives in adults, where there has been some irritation in the intestines (worms, or something else) producing the disease. In general both bleeding and purging do good; but, at any rate, it is always right to clear out the bowels. Among purgatives, I think the oil of turpentine is one of the best. It clears the bowels thoroughly; and in cases of hysterical locked jaw, I have seen it produce an instantaneous effect. Cases are on record (and I have seen several instances myself) where, in trismus of an hysterical nature, the jaw opened the moment an injection of oil of turpentine was passed up; and in other cases I have seen it open a few hours afterwards. If two or three ounces of this medicine cannot be got down by the mouth, (and it is of no use to give less), you may exhibit three ounces (diffused in gruel) by the rectum. Should this not answer, a large dose of calamel should be

given. If pills cannot be swallowed, you may place the calomel in the mouth. Mercury to ptyalism has been said by some to do good.

Opium and other narcotics have been tried in this disease; but the agency of all remedies is greatly resisted; and therefore very large doses of narcotics are borne. Dr. Morrison, a gentleman who has practised in the West Indies, says he has been in the habit of treating these cases there; and that it is very common to give one hundred drops of laudanum, as a starting dose; and to follow it up every two hours; increasing each dose by one-third of the preceding one. He also allows the patient wine and ardent spirits; employs the warm bath; and exhibits mercury to ptyalism;—paying due regard to the bowels; and he states that the result of this practice, was the recovery of more than one-half of his cases, although the tetanus was of a traumatic character. However, we have all seen opium exhibited in a large quantity, even to stupefaction, without doing any good. Prussic acid appears to have failed entirely in this disease. It has been frequently and freely given; but it has failed; and so likewise has belladonna. Some cases appear to have done well, by means of an injection of tobacco. It appears to have relaxed the spasm, and cured the disease. Dr. Latham (Senior) praises opium and ipecacuanha; which, he says, produce copious sweating. He states that the success from a combination of these remedies, has been very great.

The warm bath appears to have done no good; and sometimes to have been really injurious; while, on the other hand, the cold bath and cold affusion have relaxed the spasm; but have sometimes killed the patient at once, as if he had been shot. I presume, if the cold bath or cold affusion be employed, it ought to be at the moment that the violent spasm is on. I know of an instance where a patient was taken out of bed, in a hospital; put on a chair; placed in a tub in the middle of the ward; and a pail or two of water dashed upon him. He fell down dead, as if he were shot;—never spoke again; and all the other patients were very much shocked. Yet there are cases in which that very remedy appears to have cured the disease. There are many cases of the latter description on record, so that the practice, I should imagine, is justifiable; though I have no experience of it. The error, if there be error, consists in the cold water not being thrown on the patient when he is at the very worst. The moment you find a catching of the breath, from a violent spasm, I would dash on the water; for I think its agency, in that case, would not be sufficiently severe to produce danger. But Sir James M'Grigor says, from the result of very extensive trials of the cold bath, in the Peninsular war, that it was worse than useless.

Blistering along the spine *may* be serviceable; but it is certainly often found useless; and is unquestionably, a very cruel remedy.

Sir James M'Grigor says, as the result of his experience in the army, that all things (except one that I do not see spoken of,—iron) have been fully tried in some hundreds of cases; and that

there is little or no dependence to be placed upon them. I have looked over the list he has furnished; and, upon my word, there is almost every thing mentioned that ever was used in medicine. Sir James M'Grigor says, that the mode of treatment is certainly still to be discovered; and that as there is no analogy to guide us, there is little hope that any remedy will ever be found out. Recovery has taken place under all means of treatment; and recovery has taken place under *no* means. It struck me, from seeing the benefit that iron produced in St. Vitus's dance, that as this was a similar disease, although infinitely more severe, (characterized, not by a *slight catching* of the muscles, but by *violent spasm*), that iron might still have the same effect. I saw clearly that, in the exhibition of narcotics, we were on a wrong scent; because you may give opium till the patient is stupid, and yet the disease generally proves fatal;—at least, in this country. In these circumstances, I determined that, if ever a case came under my care, I would give iron a fair trial. At length a case did occur; this remedy was fairly exhibited; and the man recovered. The case was one of traumatic tetanus, arising from compound dislocation of the great toe. It was a well-characterized case; and several persons went to look at it. The carbonate of iron was made into an electuary, with double its weight of treacle; and each dose was mixed with a quantity of beef-tea, and stirred up well, as it was going into the patient's mouth. It was given every two hours. He took it *ad libitum*; and recovered. It was not long before I had another case. It arose from a contusion of the thumb; and was the case in which I stated the nail was separated. This was as severe a case as ever I saw;—I never saw one which did well, more severe. It was a *frightful* case; and in this patient, the carbonate of iron was got down in still greater quantity. There was no limit fixed; and it was found that he had taken two pounds in a day! His bowels were carefully attended to; and an injection was given three times a day. The iron came away in large lumps;—very similar to those which come from a horse; and they were perfectly red. However, the man in two days was decidedly better; and he repeatedly came, after his recovery, to thank me for what had been done for him. A third case came under my care, about two years ago; and occurred in a boy who had had a chilblain on his heel, or a little higher up. He was brought to the hospital, in a most frightful state; and the disease was so violent, that I had no hope of doing him good;—fearing that he would die, before the remedy could be brought into operation upon his body. It was prescribed for him; but he died before twenty-four hours had elapsed. Iron is a medicine that will not produce an immediate effect. To produce its effect upon the system, it must be given for a few days. This patient died in a violent paroxysm. I saw him in the afternoon, about one or two o'clock; and he died early the next day; so that it was a case in which the remedy could not exert its influence. It is not a remedial agent which produces an instan-

taneous effect like bleeding. You find, in St. Vitus's dance, that it is sometimes months before it produces its effect; and so it is in tic douloureux; and also when you give it as a tonic.

Whether the two first of these were cases cured by the iron, I will not pretend to say; I dare not assert that they were. I employed it from the analogy of the affection to St. Vitus's dance; both cases were traumatic; and the patients did well;—not by lingering out; for in two or three days they began to mend; and were well speedily. There is a *probability*, but no *certainty*, that the disease was cured by iron. The cases, however, are interesting, so far as that they make it an object to give iron a fair trial, in any other cases that may occur. I have had but three cases of tetanus, from the time that I determined to give this medicine a trial. In two of these it appeared to succeed; in the third there was no time for the fair exhibition of it.

I was mentioning the circumstance to a gentleman, whom I had met in consultation some few months ago, and who had practised in the West Indies; and he informed me that, in consequence of the publication of those cases, in one of the volumes of the "Medico-Chirurgical Transactions;"* he had used it in the West Indies; and I think he said eight cases recovered out of ten; and in the two cases which did not recover, the symptoms were so severe, and the jaw so thoroughly closed, that it was impossible to get it, or any thing else, down the throat. There is a case mentioned by Sir James M'Grigor, in the sixth volume of the "Medico-Chirurgical Transactions," and also in his reports (which are very interesting) of the diseases of the army in the Peninsular war. It proceeded from a slight wound in the finger. The patient (a soldier, of course) was carried in a bullock-car after the battalion to which he belonged, in a severe state of tetanus, in the midst of pouring rain; which completely drenched him in the early part of the day; the heat being 52 degrees; and then they ascended the highest mountain in Gallicia, the snow on the summit of which was knee-deep; and there the temperature was only 30 degrees. He was exposed in this condition, from six o'clock in the morning till ten o'clock at night; and arrived at his journey's end, half starved from cold, but perfectly cured of his tetanus. Whether such a mode would succeed, if it were put into practice intentionally, I do not know. I stumbled on a similar case, published in 1827. A horse which was in a state of tetanus, happened to be in a wet park, and was drenched with rain;—precisely as was the case with this unfortunate man; and the horse also did perfectly well. Whether the depressing power of cold and wet, regularly kept up for a certain number of hours, has a tendency to cure the disease, I do not say; but I think that, in a disease of violent excitement as this is, the constant,—not *sudden*, but *constant* refrigeration (by means of a low temperature, united with moisture) is likely to be of great service. There are at least

* The *thirteenth* volume. See, also, a paper by the same distinguished author, on the use of the *sulphate* of iron in tetanus, in the *fifteenth* volume.

two such cases on record; and every one must be very much surprised to find a soldier, so exposed from morning to evening recover; and the recovery completed in so short a time as one day.

For the purpose of lessening the powers, some have proposed a whirling machine, to make the patient giddy and powerless; but I do not know that it was ever attended with success.

As to the removal of the part, if there be a wound, that is perfectly useless. I had a case of tetanus, some years ago, in which an operation was proposed, in consequence of the disease having arisen from a compound fracture of the leg. The extremity was cut off, but the patient was no better; and now it is with me, and I believe most others, an established rule, when the disease has taken place from a wound, not to remove the wounded part. It is found, in almost every case, that the disease continues just the same. After a long search for cases, in scores of journals and medical books, I have been able to find only one instance, where the removal of the part appeared to be attended with the removal of the disease. I have heard of such a case; but I believe the instances are so rare, that amputation of a part is never thought of at the present day.

In treating the disease, whatever remedies you employ, it is right to introduce a cork (or something of that kind) into the mouth, to save the tongue; or the latter will be dreadfully bitten. This should always be carefully attended to.

When the disease runs on, and becomes chronic, it is necessary to support the patient well. If you do this, you will give him a greater chance of recovery. Dr. Currie, who wrote on Cold Affusion, has given (in a paper published in the "Transactions of the London Medical Society") an account of a man labouring under tetanus so chronic, as to last forty-two days; and who, in this time, drank one hundred and ten bottles of port (so that he got something by his tetanus); and yet not the least approach to intoxication occurred; and he recovered perfectly. Certainly one hundred and ten bottles of port, in forty-two days, was very good allowance; and, I should think, made him pass his time pleasantly. There is also, in the same paper, an account of a horse labouring under tetanus; which, during the disease, drank as much port wine as he was worth. I do not know his value; but his owner was so fond of him, that he allowed him port wine; and he recovered, after drinking as much as his original cost. It is certain, therefore, that, in the chronic form of the disease, we ought to support the patient as well as possible; and that wine, in the chronic form, is highly serviceable.

HYDROPHOBIA.

I now proceed to another disease, bearing a certain resemblance in some of its symptoms to tetanus, of which we have just spoken; —I mean hydrophobia (*υδωρ*, *water*; and *φοβεω*, *to fear*); because it is imagined there is a fear to plunge into, to swallow, and even to look at water. However, there is a fear of swallowing in many nervous affections; and in some common sore throats there is, of

course, a dread of swallowing. On the other hand, the fear of water, —the fear of swallowing, is not universal in hydrophobia. Although the disease has its name from a dread of water, yet this dread of swallowing water, as well as other things, is seen in certain common affections. People will take an antipathy to all liquids; and sometimes, in common sore throat, there is such a spasmodic disposition in the throat, that the attempt to swallow excites great irritation; and the recollection of it excites fear at the very sight of water; while the attempt to drink it is terrific. On the other hand, you will see persons swallow very well in hydrophobia, and put their hands into cold water; dogs will swim across a stream; and some persons in hydrophobia, it is said, drink quite well to the very last. I believe I have seen this occurrence myself.

In many cases of this disease, there is as great a difficulty in swallowing *solids* as *liquids*; an instance of which is published by Dr. Marcet, in the first volume of the "Medico-Chirurgical Transactions." Still, in this disease, it must be allowed that it is most usual for a person to have a fear of swallowing, touching, seeing, or hearing the sound of liquids. About two years ago, there was a patient in St. Thomas's Hospital, labouring under this disease; and the circumstance of one of the dressers who sat up with him making water within his hearing, threw the boy into a violent agitation. But the dread of drinking, and of touching water, is only a symptom; and there can be no doubt that even though it never happened, death would equally occur. The real character of the disease, is to be taken from the circumstance of the extreme sensibility of the surface of the body, and the extreme sensibility of the nerves of deglutition and respiration; so that any attempt at swallowing, the application of cold air to the surface, the application to the surface of a drop of fluid, whether warm or cold, if made suddenly (as by sprinkling);—even the circumstance of an insect crawling on the face or hands, or the slighest agitation of the bed-clothes; any of these things will produce a catching of the breath,—a sudden inspiration;—just such as we experience when we step into a cold bath. The diaphragm descends, just as if cold water were thrown upon us, or the wind blew suddenly upon us. Contemporaneously with the descent of the diaphragm, there is a violent spasm about the larynx and pharynx; so that swallowing is impossible, and so likewise is breathing. The diaphragm will descend; but a spasm of the glottis occurs, and the air will not go down. The glottis will relax again, and a number of successive closures take place; and, at the same moment, from the fear of being choked, there is extreme anguish, and extreme terror. Even noise and light will produce this. Not merely the circumstance of cold air blowing on the patient, but the mere draught occasioned by a pocket-handkerchief, or by waving your hand, so as to cause the air to come with full force against him, may produce this violent spasm; and not only so, but the mere reflection of a looking-glass will have the same effect. If you take a looking-glass, and allow it to play before the eyes, or if you

make a loud sudden noise, this descent of the diaphragm, and this closure of the glottis, immediately take place. Bright colours will have the same effect as the use of a looking-glass;—at least when the disease has become very severe; nay, at length the very mention of swallowing will have the same effect. From the recollection of what has been suffered, the very mention of swallowing will produce extreme agitation. Every muscular effort, of whatever kind, has the same tendency; and if the patient be compelled to make an effort to swallow, when he really cannot, it will throw him not only into agitation, but into absolute convulsions. There is extreme anxiety of mind, and extreme despondency; and you see the patient looking around him, with an eye of suspicion. He has a great aversion to strangers; and the countenance is expressive of his anxiety and distress. You notice, in this disease, very frequent sighing;—if you sit by the bed-side, you hear the patient continually sighing. Breathing is not carried on in a regular uniform manner, but is altered. The patient is extremely restless; tosses about his hands; rolls his eyes; and whatever he attempts to do, he overdoes. Such is his agitation, that if he attempt to rise, he makes more effort than is necessary; or if he attempt to take any thing into his hand, or to swallow, he dashes the cup to his mouth, and gets it all down at once.

There are also violent fits of passion in this disease. There is such extreme irritability, both of body and mind, that violent fits of passion are induced; and these are more particularly observed, on a proposition being made to swallow; and, in their fury, patients will sometimes bite. Not that they will bite like a mad dog; but the temper is so irritable, in this disease, that they will bite a stranger. This I have seen myself; but I believe it depends, very much, upon the natural temper of the individual. The mind is often so strong, in the midst of all this, that at the moment they have attempted to bite or strike, they will apologize, instantly regret it, and endeavour to make all the amends they can. They are conscious of their morbid irritability; and they beg others to get out of the way, lest they should injure them. They will make very great efforts to swallow, in order to please by-standers; but, for the most part, after declaring they will swallow, or after taking up the cup into their hands, as soon as they have got it near their mouth, they turn their heads away, and declare it is impossible. Sometimes, again, they have more firmness of mind. They will open their mouths; put the liquid into it; and then a regular paroxysm of the disease will occur. They are seen sometimes so to command themselves, that they will not only drink, but even wash their hands, to please you. Only a few weeks ago, I had under my care a patient, who, to please me, washed his hands, stirred the water about, and played with it.

Those paroxysms which I have mentioned as coming on in the disease, sometimes take place without any external excitement. When the disease has become more violent, these paroxysms occur,

from time to time, without any external circumstance having occurred to provoke them. There is, for the most part, sleeplessness; or if the patient do drop asleep, he wakes in great agitation; and sometimes the sufferer is delirious. The delirium, when it does occur, is generally of a peculiar nature; and the patient will talk violently of the past, as though it were present; and yet, in a moment, he will become calm and perfectly rational. At last, however, there is sometimes complete delirium. The eyes, towards the close, do not roll; but become red and glassy. The pupils are dilated; and the mouth is very clammy. There is extreme thirst; and from the clammy nature of the secretion, the patient suffers as much as if his mouth were dry. It very frequently makes the sufferers cry out for something to relieve their thirst; and yet when fluid is brought for the most part they cannot take it. From the clamminess of the mouth, you will see them continually hawking, and scraping their tongue against their teeth; and, in the midst of their rage, they will spit at you. They will sometimes put their fingers into their mouth, (just as you will see done by monkeys, and by persons in delirium), and will pull out a very viscid secretion. The pulse is very rapid and irregular; and during their agitation it is particularly so. It is for the most part feeble at last; but it is constantly quick, even when respiration is slow. Patients generally, at last, sink very rapidly. You are surprised, on your visit, to find that they are dead.

The duration of this affection may be from rather less than twenty-four hours, to six or seven days; but the patient generally dies in two or three days; or, at the utmost, on the fourth day from the first appearance of the true signs of hydrophobia;—the dread, the difficulty of swallowing, and the extreme sensibility of the surface. I had two patients with this disease;—little girls; who died in less than twenty-four hours from the symptoms being first observed. In two American cases which I have read, (one occurring in a subject under four years of age, and the other in a person aged seventy-three), both patients died on the sixth or seventh day;—showing that the duration of the disease has not any relation to the age of the patient. I might have imagined, from having had two patients, under ten years of age, die in less than twenty-four hours, that the young die soonest; but here is a case of a child and an old man, both of whom lingered the same length of time; and I have found this verified in other cases. Old persons will sometimes die very quickly; and young ones will sometimes live as long as I have stated. This is the general character of the disease.

The first symptoms in hydrophobia, are uneasiness or feverishness, a general feeling of indisposition, and a dizziness in the head; together with chilliness and flushes; and these symptoms may continue some days. Dr. Parry furnishes instances, where these symptoms lasted five or six days; and I believe they may go off entirely;—just as other specific diseases (diseases from morbid poison) are seen to do. We all know, in the case of gonorrhœa, that a person

will have every trait of the affection one morning, or one evening, and it will entirely go away; although he knows he has been where he was very likely to contract the disease. Continued fever will thus go off; so I believe will the plague; and ague certainly will do so. A person who has been exposed to malaria, will have merely a shivering; which will go away and not return. I believe it is just the same in hydrophobia. I saw two little girls (sisters) who were bitten, at the same moment, by a dog; and in the same place,—the face. One of them died; and the sister had exactly the symptoms I have described, as ushering in hydrophobia; but, after lasting four or five days, they ceased; and she did perfectly well.

After these symptoms have continued some little time, perhaps a couple of days, suddenly the person is surprised by a difficulty in swallowing liquids; and finds a spasm of the throat, and an impossibility of swallowing. At the same moment, perhaps, he has great anxiety and great terror; or perhaps a draught of wind suddenly blows upon him; his breath catches; and he wonders (as do also those around him) what is the matter. That was the case in a boy whom I saw, about three years ago. The first symptom of his disease, was induced by a draught from a door. A person went into his bed-room, in the morning; and on opening the door, the draught occasioned by it came full upon him; and he was observed to go almost into fits. The sudden impression of the air took away his breath; and agitated him to this violent degree.

In the course of the disease, there is sometimes a remission. The disease does not *necessarily* go on in an uniform tenor. In a case published by Dr. Satterley, one of the physicians to the Middlesex Hospital, the patient had fits of biting; and between these he was perfectly well;—even took warm fluids, and had a sound sleep. The disease is not so continuous but that, in some persons, there will be a decided remission; so that the patient can absolutely swallow liquids very well, and will go into a quiet and sound sleep. Some say (but one can hardly believe it) that there are absolute *intermissions*; that the disease altogether,—every symptom of it,—will sometimes cease for a time; and will even become *periodical!* There are cases of remission and recovery mentioned, as having occurred in dogs; but it is doubtful whether recovery ever took place in the human subject.

Now and then you will have peculiar symptoms;—such as are not observed in ordinary cases. One case of this kind occurred at Guy's Hospital; the particulars of which were published by Dr. Marcet, in the first volume of the "Medico-Chirurgical Transactions." From some disturbance of the brain, or of the olfactory nerves, the patient complained of an intolerable stench around him. This is sometimes observed in ague. In some cases, (from irritation, I presume, in another part of the nervous system), there has been an erection of the penis; and an oozing from the mouth of the urethra. These are all accidental circumstances. Sometimes, in this disease, there is no inability to swallow either liquids or solids. There is a mere tremor;—a mere agitation; and that not very con-

siderable; together with great debility, rapid pulse, and extreme restlessness. This has been said to occur chiefly, when a cat has inflicted the bite. Dr. Fothergill mentions this circumstance, in the fifth volume of the "Medical Observations and Enquiries;" but it is not an universal fact; for I saw a man who had been bitten by a mad cat, and who swallowed perfectly well. I saw him eat a pint basin-full of bread and milk, an hour or two before he died; and there was no difficulty whatever in swallowing. All his symptoms were rapid pulse, extreme restlessness, and great agitation. He thought nothing about the cat;—his mind seemed at ease on that subject; and he sat up, if you wished. During the whole of the case, there was no delirium whatever. The man died, I believe, on the second day after the commencement of the symptoms; and a short time after I saw him. He was not my patient; but I saw him in the wards of the hospital. He had been bitten, six weeks before, by a strange mad cat; but had forgotten it;—the friends alone remembering the circumstance. You will find a case published by Dr. A. T. Thomson, in the "Medico-Chirurgical Transactions;" where hydrophobia, well formed in every respect, arose from the bite of a cat.*

This is a disease which affects children as well as adults. One seldom hears of women labouring under it; but children of both sexes, and men more frequently than either, become its victims. I have already cited two cases, from the American Philosophical Transactions, where the disease occurred in patients, one of whom was a child four years of age, and the other a man who had attained his seventy-third year; so that we have here the extremes of life. Infants may not be exposed to a rabid animal; and the reason it attacks men more than females, is because the former are so much more out of doors than the latter. Dr. Parry mentions a child, only three years and a half old, having the disease.

When speaking of contagion in general, I mentioned that the contagiousness of this disease had been denied. There was a surgeon (I think at Brighton, though I have not the pleasure of knowing his name,) who lately denied that this was a contagious disease; and from his conviction that his opinion was correct, he inoculated himself with some of the saliva from the rabid animal; and did so with perfect impunity. So, perhaps, he might have gone astray, and not have contracted syphilis or gonorrhœa; but that would be no proof that there was no such contagion. However, unfortunately there is no novelty in this denial of contagion. Gerard also denied it; and there could be no other reason for denying it, than a desire to be peculiar. De Foe denied the contagion of plague; but he was soon convinced of his error. I mentioned that two students, at Paris, denied the contagion of syphilis; and inoculated themselves with the virus. Both of them became affected with the disease; and one committed suicide. If the disease were an imaginary one, why should children have it who have never heard of it? Two little

* Volume xiii; Page 298.

children whom I attended in this disease, one a year after the other, could have had no idea of it; and they died, perfectly unconscious of what was the matter with them. Adults have died of the affection, without recollecting that they had been bitten. The thought of the disease has not preyed on their spirits in the least; but they have been suddenly surprised by it; and it has never occurred to them what the disease was, or that they had formerly been bitten. An instance is mentioned in the "Medical Gazette," (December 27, 1828), by Mr. Goderich (at Fulham), of an old man, sixty years of age, who had been bitten and died of the disease; but who was unconscious of its nature to the last. Two cases are mentioned by Dr. Parry, in which the bite was forgotten; and another case in which the bite was spoken of with the greatest indifference. In the last case I had, the boy knew that he was bitten; but he thought nothing of it; and never seemed to attach the least importance to it. That there is such a disease, that its character is so peculiar, and that it unquestionably arises from a morbid poison, cannot admit of a moment's doubt. It it also to be remembered, that many persons who are bitten, and fancy they will have the disease, never have it at all. I have seen many persons bitten by dogs, wash the parts, take physic, have the parts cut out, and do all they could to torment themselves into the disease; and yet they have never had it. The character of the disease is too plain, to allow of any doubt as to its existence.

Spurious cases of nervous fever, or nervous irritability, are very different from these. If the case be spurious, the difficulty in swallowing generally occurs far too early after the bite. A certain period (usually some weeks) elapses between the bite, and the appearance of the disease; but where persons have a difficulty in swallowing, from mere nervous terror, it generally begins at an early period. There is much too early delirium and general convulsions; the agitation of the mind arising from fear brings on a degree of insanity. Then, again, in the spurious form, there is generally no catching of the respiratory organs. The great feature of this disease is the sudden inspiration, as though the patient were plunged into cold water; and this produced not only by an attempt at swallowing, not only by the sight of water, and not only by *speaking* of water, but by a breath of cold air, or the crawling of an insect upon the surface, or by any sudden impression. Patients who only fancy they have hydrophobia, have a difficulty of swallowing; but they forget to have a catching of the breath. They are not aware that that is a symptom. They only think of the difficulty of swallowing liquids; and therefore that symptom only arises. They are not conversant enough with the disease, to know another remarkable symptom; and therefore that never takes place; or if it do, it is only a simple local affection, producing irritation of the organs of respiration. So characteristic of the true disease is this sudden but deep inspiration, that when a paroxysm takes place during sleep, it always begins with it. So peculiar is it to the disease,—so pathognomonic is it,

that when a patient is seized with a paroxysm asleep, he always awakes with a sudden deep inspiration. In the true disease, patients, in order to please you, will make every attempt they can to swallow. They will say they cannot; but then they will try. They will make every possible effort, and succeed to a certain length, and very frequently succeed entirely; whereas, if a person have the *fancied* disease, he concludes it is quite impossible. He will not *hear* of such a thing; and considers it almost an insult for you to suppose that he can swallow. In the fancied disease, the patient has not sufficient firmness of mind to make the attempt; and shudders at the very sight or name of liquid; whereas, in the true disease, patients will not only do this, but will even put their hands into cold water; and, as I have already said, will agitate and stir it about. The people who *fancy* it are not *surprised* by the disease;—it does not take them *suddenly*. They anticipate it; they look forward to it with a low melancholy; and then, at last, they begin to find they cannot swallow; whereas, in the *true* disease, the symptoms come on suddenly. In the spurious affection, also, there are generally a variety of nervous symptoms; such as globus hystericus, and other symptoms common to nervous derangement. There are not the usual effects, in the spurious disease, from the sudden impression of cold air, and the sprinkling of cold water. Certainly the former does not produce the agitation, which it occasions in the true disease. It is to be remembered that the disease may be spurious, when a person has actually been bitten by a mad dog. He may have been bitten; and the poison may not have taken effect; and yet the person has agitation of mind, sufficient to produce difficulty of swallowing. It is probable that it is in such cases, that persons have been said to recover from hydrophobia; but they have done no such thing. The persons have been bitten by a mad dog; and for want of the practitioner being fully acquainted with the disease, he has not made a sufficiently accurate diagnosis; and has supposed that recovery has taken place from the disease.

After death, there is sometimes found a fulness of the vessels of the head; and sometimes marks of decided inflammation, not only in the head, but within the spine. Sometimes there is an effusion of *serum*, either pale or bloody; and sometimes *lymph* has been found effused, particularly about the base of the brain. In the case of the old man to whom I have already alluded, as having died without suspecting the nature of his affection, and the particulars of which are contained in the "Medical Gazette," there was inflammation of the whole of the base of the brain, of the spinal cord, the cerebellum, the cruri cerebri, and the two thalami nervorum opticorum; and the corpora striata were redder than natural. This was an *inflammatory* case of hydrophobia; but in other cases no such thing has been discovered. I have seen patients opened, where there was no effusion, or redness, or any thing that would lead the best anatomist to say, that the brain and spinal marrow were not perfectly healthy;—just as is the case in tetanus. Sometimes there are red spots

found in the fauces, larynx, trachea, and bronchia; and likewise in the stomach. In a great number of cases, there is considerable redness of the glottis and epiglottis; and great congestion of the lungs. The latter circumstance you would *à priori* expect, in consequence of the difficulty of breathing, and the spasm which takes place and disturbs their functions. Sometimes, however, nothing has been found from head to foot; and Magendie says that, sometimes, he has opened dogs and found nothing. I mentioned that, in the stomach, sometimes red spots are found to a great amount; but sometimes there are none at all. It appears, therefore, that the disease, like tetanus, is not necessarily of an inflammatory nature. Now and then signs of inflammation may be found. It may, in some cases, be an inflammatory complaint; but in many cases it is not; and it is clear that the nature of the disease is not essentially inflammatory.

Some gentlemen, from observing redness and congestion about the air-passages, and others from observing similar appearances in the alimentary canal, have ascribed hydrophobia to a morbid state of these parts; but I think the extreme sensibility of the surface of the body, the extreme agitation on attempting any muscular effort, the convulsive movements that take place in swallowing, the spasmodic catching of the breath, even on touching the lips with liquid, or the application of cold air to the surface, the anguish and irritability of the mind (anguish not arising from *pain*), the great suspicion, and at last deliriuni, all shew something more than an affection of the lungs or stomach. Such symptoms as these indicate an affection of the nervous system. In tetanus there is no morbid irritability either of body or of mind. There is only a spasm of the voluntary muscles; and this, in all probability, arises from an affection of the origin (or termination) of the nerves, in the head or the spinal marrow. Such a state I said is not necessarily inflammatory; though occasionally inflammatory signs are found. But in hydrophobia there is no irritation of the voluntary muscles in general; but a morbid sensibility of the nerves of sense;—particularly those of touch, and of those running to the muscles of deglutition and respiration. In addition to this, the mind is altogether in a state of suspicion and irritability;—shewing that it is the centre of the nervous system, that is particularly affected. What it is exactly, it is impossible for me to say; but so far we may trace it. One cannot attribute it to the nerves; or to that part of the brain connected with the nerves of deglutition and respiration; because we see extreme suspicion of mind,—extreme mental anguish; and we see that many parts of the nervous system are affected. We may venture to say that the state is not necessarily inflammatory; because bodies of hydrophobic patients are often opened, in which no signs of inflammation are found.

The blood, in this disease, is not buffed; neither is the urine high coloured. On the contrary, it is pale. The tongue is perfectly clean; but the mouth is clammy, and is filled with a viscid mucus.

The pulse is not full. It is not at all an inflammatory pulse; but it is, nevertheless, rapid and irregular;—frequently very much so. I may mention that many persons have not found any inflammation whatever; but there have been cases where local inflammation has existed, particularly at the base of the brain. The thirst in the disease does not arise from an inflammatory state, or from feverishness; but is either a part of the disease, aising from the disturbance of the nerves, or from the clammy secretion of the mouth. You know that when all the parts of the mouth are dry, or are covered with only a viscid secretion, and not moistened by a thin fluid, thirst is the necessary consequence. There is, in general, only morbid heat from time to time, when the patient is particularly excited. I will not pretend to say what the state of the nervous system is, any more than in tetanus. We may limit the disease to the nervous system; particularly to the nerves of touch, and the nerves running to the museles of deglutition and respiration; together with general excitement of the brain itself; but what the particular state is, it is impossible to say.

The exciting cause of the disease, however, is well known. It is a secretion from the mouth of a rabid animal; but I do not know that we have any proof, as to whether it is the saliva or the mucus. It is said to be the *saliva* which is poisonous; and it *may* be that fluid; but I do not know that it is *proved* to be the saliva, rather than the mucus. The saliva of the human subject is equally poisonous with that of the brute; or, at least, it is *also* poisonous; for Magendie says that he inserted the secretion from the mouth of a rabid human being (that is to say, a person labouring under hydrophobia) into dogs; and they became the subjects of the disease.

After the poison has been applied, there is usually an interval before the appearance of the disease, of from one or two weeks, to three months. I believe the average interval is from one to two months. The disease is said, sometimes, to have appeared in five or six days; and a case was mentioned, a short time ago, in which the affection appeared to come on the next day;—at least, it was so said. In other cases, the disease has not appeared for nine or twelve months. There is a case mentioned in the "Philosophical Transactions," where the affection did not come on for nineteen months. Dr. Bardsley, in the "Literary and Philosophical Transactions of Manchester," has furnished an account of a case, where the disease did not occur till twelve years after the bite. The case has given rise to a great deal of doubt. In the first place, we may almost doubt whether the disease was genuine; but allowing that it was, then there is a doubt whether it arose from morbific poison, or sprung up *de novo*. We are told that it was a genuine case; but there is great difficulty on both sides. If we suppose it to have been owing to a bite of a rabid animal, and the wound had been inflicted twelve years before, there is great difficulty in supposing that the poison had existed so long; and again, if it were not owing to this bite, it must have sprung up *de novo*. Dr. Parry, who has

written on Cases of Tetanus and Rabies Contagiosa, thinks the case was not genuine; and he also considers that the shortest well-authenticated interval, is two or three days; but I think he is wrong; for I have reason to believe it has occurred at a shorter interval. I also think that Dr. Parry is wrong on another point; for he states that he can find but thirty-eight well-authenticated cases of hydrophobia on record. Now in my limited period of practice, I have seen six or eight cases in London; and at the same time that I have seen these, there have been others which I did not see. Two of these cases occurred in private practice; and four or five in the hospital; and having seen these myself, I must think the disease is far more frequent than for Dr. Parry only to find thirty-eight cases on record. The fact was, Dr. Parry saw a great number of cases called hydrophobia, that were not instances of the disease; and he was too scrupulous in allowing that cases of hydrophobia which he found in books, were genuine; and therefore he put too many in the spurious list. The interval, however, is various. It is said to be about the same in the dog as in the human subject. Among Lord Fitzwilliam's hounds, in Yorkshire, the interval varied from six weeks to six months. His pack were bit by a rabid animal; and the disease appeared at various intervals, from six weeks to six months.

Persons usually escape, if the poison be not inserted into a wound. Cælius Aurelianus mentions the case of a woman, who was seized with the disease three days after having eaten some game which had been sent to her; and which was supposed to contain hydrophobic poison, in consequence of having been killed by a mad dog. If the case was true, there was probably a crack in her lips. Dr. Bardsley mentions a case, which occurred, at the common interval, in a shepherd, who had only been licked by a dog. His dog was rabid; but then shepherds continually have cracks in their hands; and nothing is more likely, than that there was a crack in some part of his hand. It is possible for the brute to give the disease to the human subject, when the animal is not known to be mad. Many cases have occurred of persons being bitten by dogs, and becoming mad, though the dog was not supposed to be mad, till afterwards. The disease must have existed at the time, or the dog could not have communicated it; but it exhibited no *signs* of madness, so as to be considered in that state. It has been imagined that all bites of animals have something venomous in them; and we are told that many bites of brutes have caused signs of hydrophobia, epilepsy, and even death; but, in all probability, these were nervous symptoms, induced by fear.

On the other hand, most persons bitten by rabid animals, do *not* suffer hydrophobia. Dr. J. Hunter mentions, that twenty-one persons were bitten by a dog; and among them only one became affected with the disease; although none of them took any steps to prevent it. Dr. Vaughan mentions, that between twenty and thirty persons were bitten by a mad dog. Some did nothing; others took the Ormskirk medicine, and had a dip in the sea; and yet, of this number, only one had the disease. Dr. Parry mentions that several

sheep and dogs were bitten; and that, among these, not one sheep had the disease, and only two dogs; and I may remark, that one of these dogs was bitten before the sheep, and the other just afterwards. I had a case of this disease in a little girl, who was standing at her father's door, when a dog snapped at her face, and did the same at another sister; and then passed on. At the expiration of six weeks, or two months, the sister who was bitten second had hydrophobia, and died; but the other sister never had the disease, or the premonitory symptoms went off; and she may be alive now. I mentioned before, that I will not say she had the disease; but if she had, it went off; and yet the little girl who was bit second had the disease. We might imagine that the girl *first* bitten would have been most likely to suffer the disease; because the teeth must have been covered with secretion; however, it was the *second* that died from the disease. Nothing, I understand, was done in this case; except that nitrate of silver was applied.

Much depends upon whether the part is bare or not. Hence you find that, by far most frequently, persons who have hydrophobia through a bite, have had the wound inflicted on the hands or face. In three cases that I had under my care, in private practice, one patient was bitten on the face, and two on the hands. If the part be not bare, the tooth is wiped as it passes through the clothes; and therefore no fluid is conveyed with the bite. It is a bite on a bare surface that is generally productive of the disease. Some persons have so little disposition to the affection, that notwithstanding they are bitten on bare parts, and no precaution is taken, they do not suffer the disease; and sometimes persons will not experience it, till they are thrown out of health; or till they are frightened; or till they catch cold; or till something happens to disturb the constitution, and then it appears. This is precisely what happens in the plague, in ague, and in other affections.

The wound is generally healed when the disease appears; and, as I stated formerly, it is sometimes entirely forgotten. Some say that if there be a wound, it becomes livid when the disease appears; or that it looks yellowish; and that sometimes it re-opens. Sometimes, when it appears, there is pain and numbness in the bitten part, extending along the course of the nerves. This was the case in an instance I had under my care this winter. The boy had been bitten in the hand, and the part had been cut out entirely; but pain was felt along the nerves, and extended to the neck, at the time that the disease began. It was curious that there was no pain in the wound, or in the hand, or in the upper arm; but it extended inwards, along the nerve, to the neck. More frequently than not, it is along the course of the *nerves*, and not along the course of the *blood-vessels*, that the pain has been observed.

The animal which most commonly gives the disease, is the dog; but other brutes will have it; and probably *all* of them will imbibe it, and also communicate it. The wolf, the fox, and the dog, are all of the canine species; and they are well known to give and

receive it; and they appear to *originate* it likewise;—that is, there is every reason to believe it will originate in them;—unless the poison may remain dormant as long as some people imagine. Unless it can exist in a dormant state for a long time, there is every probability that hydrophobia is produced *de novo*. The cause of it, if it *can* arise *de novo*, is not well known. It is not putrid meat; for the Caffres, in Africa, feed all their dogs on putrid flesh; neither is it *salt* meat; neither is it a want of drink. The disease is unknown in Syria; and, according to Dr. Parry, in the interior of the Cape of Good Hope, where there is plenty of heat; and, in some instances, plenty of putrid meat. It is said never to be known in South America; but then two-thirds of the pups there die of the *distemper*; and some persons contend that the distemper prevents the spontaneous occurrence of hydrophobia. I do not know whether that is correct.

Dr. Jenner, in the first volume of the "Medico-Chirurgical Transactions," lays down the diagnosis between hydrophobia and the distemper. He says that, in the latter, the eye is dull;—the dog looks stupid, and has an insatiable desire for water. The distemper is a violent kind of catarrh; and we may therefore imagine that the eye will look heavy, and that the animal will become thirsty. The dog wanders from home; and at length he is disposed to be sluggish. But in hydrophobia, Dr. Jenner says, the eye of the dog is bright. He looks furious; and generally declines water. When a hydrophobic dog bites, it sneaks off directly, and is not found again; or if found, it is dead. It goes away from the place, and is frequently afterwards found dead. It only gives a sneaking bite, and does not continue its attack like another dog; and after it has bitten an individual, it skulks into a corner, and then runs off. Hence it is that many persons who have been exposed to hydrophobia, will tell you they were bitten by a strange dog, that was perhaps passing by;—that it attacked them without any provocation, and then made off. A German physician (Dr. Hertwick) says, that the voice of the dog, in hydrophobia, is peculiar and pathognomonic. He says that the bark of a dog labouring under the disease, ends in a howl; and the mouth at the time of barking is lifted up. He says that he has made experiments on the subject;—that he inoculated fifty-nine dogs, with diseased secretion from hydrophobic dogs; and that only fourteen took the disease. He states that he made experiments with the blood; and found that it was equally poisonous with the secretion of the mouth. He says the saliva will act, in producing the disease, at all periods of the affection; and in twenty-four hours after death, if it be taken from the body, it will still give rise to it; but he says that, if the poison be swallowed, it is perfectly inert. You are perhaps aware, that the poison of serpents may, as we are told, be swallowed with impunity.

With regard to the prevention of the disease, it is certainly our duty to cut out the bitten part as soon as possible; and, perhaps, at

any time between the bite and the appearance of the disease. If the part cannot be cut out, I should think it proper to remove the whole limb. I am not sure that excision prevents the disease; because I know there are many cases, in which this has been done, and yet the disease has occurred. A perfectly authenticated case was mentioned to me, lately, in which not a moment was lost; for the person, the instant he was bitten, walked across the way to a surgeon, and had the part freely cut out; but notwithstanding this, at the usual time he had the disease. I am not sure that it prevents the disease. It is, however, but common sense to do every thing we possibly can to prevent it; and excision is the most proper plan.

Some have applied cupping-glasses; and this is a most ancient practice. You will find it mentioned by Celsus. Dr. Parry also recommends it; and, still more recently, it has been recommended by Dr. Barry; who says that its use has been shewn, by experiments with various mineral and vegetable poisons. If these poisons be applied to a wound, and the poisonous effects begin, and the cupping-glasses be applied, in proportion as they act, the influence of the poison disappears. It is therefore recommended to us immediately to apply cupping-glasses to the wound; and to excite the part thoroughly; so as, if possible, to draw out every particle of the diseased fluid. The stream, of course, will be towards the glass; and as it will be washed away, circulation and absorption will be prevented at the moment. Then you may cut the part out, and cup again. Whether it would be useful to adopt this plan, I cannot tell. If you could have a fair opportunity to cut the part out at once, I should think that would answer every purpose.

Caustics are by no means to be depended upon; but if they be used, they should be very strong;—such as caustic potash, or strong mineral acids; or (what perhaps is better than all) the actual cautery should be employed. I do not know that excision is to be depended upon; but, after excision, in order to make what is considered certain *doubly* certain, caustic might be employed; or the actual cautery. Some have recommended the chlorides; and it is very possible that they may destroy the poison; but, even supposing they will, one cannot be sure that every particle of the poison has come into contact with a part of the solution of the chlorides. We are not sure that every particle has been decomposed; and therefore if the chlorides be applied, still I should cut the part out in the first instance, and apply them afterwards. The use of these other things, in addition to excision, may be very great. If the part be one that cannot be cut out,—if the wound be so deep that it is impossible to cut it freely out, and the removal of the part by amputation be not possible, then use the actual cautery, or caustics. When the part is cut out, we are advised not to allow it to heal, but to keep it open; so as to produce a discharge for a length of time. However, I know of plenty of cases where this has been done; and yet the disease appeared; though, certainly, one would fancy it was

better than mere excision. After we have cut out the part, then we may apply caustic, or the actual cautery; and then keep up a discharge.

In the way of prevention, we are strongly recommended to give mercury to ptyalism. You will find a great many cases, where the disease never appeared after this was had recourse to; and in other cases you will find it stated that, in some instances in which mercury had not been employed, the disease appeared; but there are cases enough on record of the disease occurring, after mercury had been exhibited to the greatest extent. Not knowing what to do in the way of prevention, in the case of the sister of the little girl who died of hydrophobia (two months having elapsed since the bite) I exhibited mercury freely. I was not content with its exhibition by the mouth; but a strong solution of oxymuriate of mercury was made; and she was washed with it till a rash was brought out; and then it was discontinued, lest inflammation should come on. In this way her mouth was got tender; and she had nothing more than the premonitory symptoms. Whether the mercury had any effect I do not know; but I should think not; because I believe the symptoms went off before the mouth was affected. I should think there is no reliance to be placed on mercury.

Dr. Good thinks that the belladonna united with the oxymuriate of mercury, in large quantity, has acted as a prophylactic in his hands. Dr. Spalding tells us, that the exhibition of scutellaria laterifolia is successful; nay, that it prevented the disease in thousands of cases of men, dogs, oxen, and swine. The "Ormskirk medicine" was once held in very high estimation. It is said to consist of powdered chalk, Armenian bole, alum, powder of elecampane-root, and oil of anise. In London, sea-dipping was formerly thought very good; so that when a person was bit, he took a trip to Gravesend, which is the nearest point where the water contains a large portion of saline ingredients. Any thing may do good which will fortify the mind; and the disease may, by that means, be more or less opposed. Dr. Marochetti published a pamphlet, a few years ago, in which he asserts that if the disease will appear, pustules form under the tongue after the bite; and if these pustules be abraded by a needle, and the mouth be washed with a decoction of genista tinctoria (butcher's broom), and it be taken internally, the disease is prevented. Others have, subsequently to the appearance of this publication, made a point of attending to this circumstance; but they have found no pustules, even in cases where the disease came on; and though the genista tinctoria was fairly tried, the disease nevertheless made its appearance.

Venesection has been strongly recommended, on account of its supposed efficacy in some Indian cases; but it is doubtful whether it is serviceable. It was fairly tried by Dr. Rutherford, many years ago; and also by Dr. Parry. I employed it in one case; and I fancy I sent the patient out of the world, some hours sooner than she would otherwise have gone. As the blood flowed, the pulse

became weaker, and the disease much more intense; and the patient died in a very short time. In the "Medical Gezette" for December, 1828, you will find a case mentioned by Mr. Goderich, and to which I have before alluded. The patient was an old man; and was bled to the amount of one hundred and fifty, or one hundred and sixty ounces. No relief was afforded; but he became worse and worse, and died in twenty-seven hours from the period of the attack. Magendie and Dupuytren have employed venesection, and failed. M. Breschet also says, that the more he bled his patients, the more quickly they seemed to die. I am speaking of a *rational* degree of bleeding; and it certainly does harm.

In some cases published by Dr. Satterley, it is said that an emetic proved useful. All things, however, have been found useful in the hands of some. All narcotics, opium, belladonna, nux vomica, and prussic acid, have failed. Opium injected into the veins, has seemed to give no sort of relief; and musk also has been given without any real benefit. I was told of a case where prussic acid was given, to a very considerable amount; and yet no benefit whatever arose from it. The chlorides and muriatic acid have also failed. I should tire you if I were to enumerate all the drugs that have been recommended in this disease, and have failed. Every article that ever was swallowed, in the way of physic, has been given without any benefit. I made a fair trial, the other day, of a vegetable matter (guaco) which was said to cure the disease to a certainty;—there could be no doubt of it whatever; and Dr. Roots also made a fair trial with it; and the patient was better. Now and then, however, there are irregularities in the course of the disease; and whether the improvement was ascribable to the medicine or not, I cannot tell; but I should think not; for the patient died at the usual time. Some have recommended a whirling machine. Van Helmont used to recommend putting the patient under water, and keeping him there till he was nearly drowned; but I believe nothing will do good when the disease is formed; and I doubt whether much good can be done, even in the way of prevention.

NEURALGIA.

The disease of which I spoke last, is characterized by morbid sensibility; and the disease of which I shall now speak I have selected, because it also is characterized by morbid sensibility. The disease is called *tic douloureux*, or *neuralgia*;—violent pain of the nerves. It is said to be called *tic douloureux* (which is a very odd appellation) because the pain resembles the bite of an insect;—the sudden sharp pain arising from the bite of an insect; or because the horse bites the manger, when as (is supposed) he labours under it. The word "*neuralgia*" is very appropriate; but the word "*tic*" is one that I do not approve.

The disease is marked by a violent, stabbing, plunging pain; increased (or even brought on, when it does not exist) by the slightest touch of the skin. When it is present, it is increased by

the least touch; but very firm pressure, I know, will relieve it. It is increased too, when present, by blowing on the skin, or by the shaking of the room; and is then exactly like an electric shock. There is generally no swelling or redness. There may be; but it is not essential to the complaint. Tic douloureux generally takes place in the course of some well known nerve; and hence the disease is now more appropriately called *neuralgia*;—"nerve-ache." Sometimes the pain does not follow the course of a nerve; but still we must consider it according to general rules. Sometimes it is not an aching of a nerve, but the whole of a part is affected together; so that the disease will exist in the breast, in the heart, or in the pericardium; and once I saw it in the loins,—apparently not following the course of any nerve; but affecting various nerves in the mass. If the nerve affected have small muscles in the neighbourhood, they are generally twitched; so that, when a patient has the disease in the face, you see the side of the face catching every moment. If the disease be dreadfully severe, as sometimes it is, then you have convulsions of the large muscles.

When it is a distinct nerve that is affected, it is (more frequently than not) the supra-orbital, the infra-orbital, or the pes anserinus; and next to these the inferior maxillary. When it is situated in these parts, you will have a twitching; because the muscles of the face are so small; and from the disease occurring in the neighbourhood of glands, you commonly have, in these cases, a great flow of tears or of saliva. The disease is sometimes seen in the fingers, sometimes in the thumbs, sometimes in the feet, and sometimes in the tongue. I had a case where it clearly occurred in the peroneal nerve; and another where it clearly occurred in the tibial. The disease comes on in paroxysms, and the pain is dreadful; so that, occasionally, it brings on delirium. After a time it will, in some instances, cease spontaneously, without our knowing why; and, in other cases, it will produce great emaciation, and end in insanity, or some other disease of the nervous system.

This disease is said to have been well described, first of all, in 1756, by a surgeon named Andry; who lived in London, and who wrote on diseases of the urethra. It is a strange place in which to look for an account of neuralgia. Dr. Fothergill wrote upon it, in the fifth volume of the "Medical Observations and Enquiries," published in 1776. It is a disease which I suppose has always existed; but, like true hydrophobia, it has not been well described till modern times.

After death nothing has been found. Sir Charles Bell and Dr. Magendie both say, that they have examined neuralgic nerves, and found nothing; but, by the long continuance of the pain, the neurilema (the covering of the nerve) becomes thicker. The irritation has occasionally produced a tumor during life. From the great thickening of the surrounding parts, the veins around the nerves have sometimes been found varicose. Andral, the most recent writer on this subject, says that in acute and chronic sciatica,

which is a kind of neuralgia, he never but once found any alteration of the nerve; and that in that one case, the nerve was merely a little redder than usual;—it having been injected. He says that, in a woman who had constant pain at the back of the neck, on the left side, he found nothing either in the trunks or branches of the brachial plexus. In the nerves, in a case where rheumatic pain existed at the moment of death, he found nothing. The true nature of the disease, therefore, is very often a mystery.

Neuralgia certainly arises, in many cases, from cold; and in some it certainly arises from mechanical irritation of the nerve; such as is occasioned by the stumps of old teeth, or by an exostosis. Many cases have occurred, in which the bones of the cranium have been found in a state of exostosis, or carious, when the disease appeared; but this is not by any means necessary. The disease frequently occurs, when you cannot explain it at all; and after death nothing has been found. Dr. Macculloch thinks that it arises from malaria; but then he ascribes almost every thing to malaria. I have no doubt he is quite right in a great deal of what he says; but still he ascribes too much to malaria. He considers that almost every case of tooth-ache arises from that sourse. Dr. Macculloch appears (to all but himself) to ride his hobby a little too much. Errors have been committed on the other hand; and teeth have been pulled out, where the pain did not arise from the teeth. I have seen cases, where a person has lost almost every tooth; and has then been cured by quinine. However, it is possible that the nerve or the neurilema, one or both of them, may be inflamed; and, if that be the case, you must expect violent pain.

Neuralgia, which exists in a certain well-known nerve, or is attended by heat, or any sign of inflammation, is generally called tic douloureux; and I believe that term was applied, by old writers, to the pain running in the course of a particular nerve. But there is a kind of neuralgia, which is decidedly a rheumatic pain in the nerves. It clearly arises from cold; and nothing more than rheumatism affecting the nerves. Rheumatism, for the most part, affects the fibrous membranes, ligaments, and aponeuroses; and sometimes the muscles; but now and then it affects nerves; and then, of course, the nerves will ache. There is a kind of rheumatism which affects the nerves; therefore there is a kind of neuralgia which is rheumatic; and you find this sometimes inflammatory and sometimes not;—just as is the case with rheumatism.

In such a case as this, the disease arises from cold; and, in the first instance, there is a great deal of heat, pain, and tenderness;—not pain resembling that of an electric shock; but tenderness of the part; and you generally find, at the same time, rheumatism in some other parts. There is frequently periodical rheumatism in the nerves, coming on in the evening;—about six o'clock the patient has a regular paroxysm. You find in it all the characters of rheumatism, with only this difference;—it affects well-known nerves. Besides the aggravation of the pain at intervals, in these cases, there

is generally a constant dead pain. This kind of neuralgia is, for the most part, very easily cured. The remedies for rheumatism, in other parts, are equally successful in the cure of this. We often see rheumatic neuralgia affecting particularly the sciatic nerve; or affecting all the nerves on one side of the head, the supra and infra-orbital nerves, the mastoid muscle, and the scalp; but true neuralgia (described as tic douloureux) is a very obstinate disease; and is far less frequently cured than not. It affects particular nerves; and is seen chiefly in the face.

True chronic neuralgia, not arising from cold, and coming on in a violent, stabbing, plunging form, aggravated by the least shake of the patient, and by touching the surface, is certainly best treated by the subcarbonate of iron. Sulphate of quinine is an excellent remedy, and so is arsenic; but, upon the whole, subcarbonate of iron is the best. Whether sulphate of iron will cure it I do not know. For our knowledge of the power of this remedy over the disease, we are indebted to Mr. Hutchinson. He tried various medicines, and this among the rest; and it succeeded. It is a *remedy* but not a *specific*. I do not recollect that I ever *cured* the disease; but I have in almost every case made the disease *better*, and caused it to disappear for a time; but it has after a while re-appeared. You should not think you have failed, till you have given a sufficient dose; for if you have not succeeded with *small* doses, you should not give up the remedy, till you have exhibited *large* ones. The disease is by no means common. I am sure I have not seen a dozen cases of it. I see cases of common neuralgia every day; but of the old tic douloureux, I am sure I have not seen altogether a dozen cases; and not one of them was cured. Iron, however, is an excellent remedy. It is a great thing to make the disease disappear; and it is no great trouble to the patient to take the remedy again. But if you consider that it sometimes arises from a diseased bone, or an exostosis, or some mechanical irritation of a nerve, and that it may arise from a change of structure, you must see that there is no specific for it. The mere pain may be relieved by iron; but the disease is of such a nature, that iron cannot remove it; and therefore the disease may be said inevitably to return. The sulphate of quinine has appeared to cure the affection; but this has chiefly been when there was a distinct intermission,—when the disease was periodical; and perhaps in cases where it arose from malaria. Arsenic, too, undoubtedly has an excellent effect. Belladonna, both internally and in a plaster, will relieve the pain; and some persons have said they have seen it cured by it. Stramonium and opium have a similar effect; but, in general, you may give these things till you induce vertigo and apoplexy; and yet the pain will be no better. Belladonna and perhaps stramonium, are better than opium; and they appear to have done occasional good.

If all these means fail, certainly the nerve may be divided; but if that be done, a part should be cut out, that the ends may not find

each other,—may not unite together; but even that is a very uncertain remedy. Complete division of the nerve, and excision of the part, have been practised over and over again, without any beneficial effect. In some cases the nerve has united; and, in other cases, the two separated parts have been as painful after the operation as before. You will find a case mentioned by Mr. Wardrop, in the eighth volume of the "Medico-Chirurgical Transactions," where the pain occurred in the nerve of one of the fingers, and where nothing short of amputation succeeded; but that succeeded perfectly. There is a case mentioned in the fourth volume of the same Transactions, in which amputation also proved successful. But even where amputation has been resorted to, the disease has sometimes reappeared in other parts.

Of course, if there be an obvious exciting cause, it should be removed. If old rotten stumps in the gums be producing it, it would be right to take them away; but when we consider how large a number of people have this cause of irritation, without any such disease being produced, one is more inclined to trust to the general remedies, than even to the removal of the stumps; for I know that after they have once excited the disease, or have existed with it, the disease will continue after they are removed; and though it would be but common sense to get rid of an obvious cause, yet the sulphate of quinine will cure many cases, notwithstanding the old stumps are allowed to remain. It is said that, for the purpose of alleviating the pain, the steam of water, conveyed over the affected part by means of a tube, soothes it very considerably. Mr. Pearson (a surgeon, formerly residing in Golden Square) states that, in painful affections of the nerves of the arm, he produced great benefit by employing strong stimulants;—stimulants made with strong acids, so as to produce extreme irritation.

It is the other form of neuralgia,—*rheumatic* neuralgia,—which is for the most part so easily cured; and the cure of which has been published, over and over again, in hundreds of cases. Some give the general name "*neuralgia*" to this particular form of the disease; and others, conceiving that the word "*neuralgia*" is applied to tic douloureux, are astonished to find that some practitioners have had scores of cases; and that nearly the whole were cured. I believe the truth is, there are two different forms of the disease; the one more or less permanent, and not dependent on rheumatism; and the other connected with it;—the one obstinate, and the other very curable. In rheumatic neuralgia if there be any heat,—if it appear like active rheumatism,—if heat make it worse,—then you will find that blood-letting (general and local) colchicum, and mercury, and even the application of the latter to the parts affected, do great good. If, on the other hand, it be of a passive, torpid kind, you find stimulants of great use; and you will find narcotics, stramonium, and belladonna, answer here a good purpose. I have cured many cases by stramonium. Arsenic is of great use; and so likewise are quinine and iron. It is in this form of the disease, that you may do so much

good. Stimulating liniments, too, are here very serviceable. When the disease assumes a periodical form, it is most likely that quinine or arsenic will cure the disease, much better than iron.

This is a very curable affection. If it assume the character of acute rheumatism, you must apply the remedies for that complaint; but if not, by the exhibition of various stimulants internally, and their application externally, with treatment of that description, you will cure many cases. Acupuncture, which I will speak of when treating of rheumatism, is also very serviceable, in this kind of neuralgia; but, in the other form, it is of very little use; and for the most part of none.

PARALYSIS AGITANS.

Having treated of diseases of *sensation*, I shall now class together all those that are diseases of *motion*.

The first disease of this description of which I will speak, consists in a very slight tremulous motion; and is called *paralysis agitans*; or, in common language, *shaking palsy*. (The word "*paralysis*" is from παραλνω, *to enervate*.) It is defined to be an involuntary, chronic, tremulous motion of more or less of those parts of the body which are subject to volition, together with lessened muscular power; occurring in parts when they are not in action, and even when supported; together with a tendency to bend the trunk forwards, and to pass from a walking to a running pace; the senses and the intellect being uninjured. Tetanus affects the voluntary muscles; but palsy does not affect them, like tetanus, with spasms; but with minute convulsions called *tremors*; alternating perhaps with relaxation, and quite involuntary. Not only are the motions involuntary; but the patient has not the same power in producing voluntary motion, that he has in tetanus. It is not the tremor that occurs in a person who has been intoxicated the night before, or has taken a cup of strong coffee or tea;—the tremor which he shews when going to put the glass to his head, and shakes it till he spills the contents; but there is a tremor when the parts are still, and even supported. Of course, when we run, we make a much greater voluntary effort, than when we walk. The faster we run, certainly the greater is the effort we make, and the more powerful and steady is the motion. We can conceive, therefore, that, by a strong effort, the patient is more likely to overcome involuntary motion, than if he be only exerting half the volition; so that, you observe, persons in this disease are not to be interrupted; and are constantly on the trot, like a twopenny postman.

The muscular weakness and tremors begin, generally, in some one part of the body only;—for instance, in the head; but most frequently they begin in the hand or in the arm; and perhaps it is not till after some months, or even some years, that another part is affected. But the disease frequently increases both in degree and in extent; more parts become affected; and parts affected before become more affected; till, at last, the whole body shakes. Like

St. Vitus's dance,—the next disease of which I will speak,—it may be checked for a moment, or a few moments, or even to the extent of a minute, by a violently strong voluntary effort; but it soon returns. The patient becomes less upright, bends forward, walks upon his toes, and steps quick and short; till at last he comes (as I stated in the definition) almost to a running pace. If the disease remit in one part, it generally increases in another; so that if both arms tremble, and you see one improved, the other will immediately do double work;—it will shake in a two-fold degree. This, we shall see, is also the case in St. Vitus's dance. A change of posture will sometimes disturb the action that is going on. This tremulous motion ceases during sleep;—the same as in St. Vitus's dance; unless the case be very severe, and has continued for a long time; for then the tremors will continue even during sleep. At length the muscles of articulation, mastication, and deglutition, become affected; and, finally, the urine and fæces are discharged involuntarily. Such is the loss of muscular power; and in the midst of all this misery, the patient becomes emaciated, and death generally supervenes.

However, sometimes the disease does not extend at all. This you must have observed. Many persons have shaking palsy of the head, for several years, without any other part shaking, and without the head shaking more and more. You will see many elderly persons who have been so affected. This is a disease which frequently attacks persons in the decline of life. There is a curious instance mentioned by Mr. Parkinson, (whose work on Paralysis Agitans is the best that has been written on the subject), in which hemiplegia occurred, and the paralysed parts ceased to shake; but when the hemiplegia ceased, then the shaking returned.

You have to make a diagnosis between this disease, and the tremor induced by drunkenness, or violent passion, or that which occurs in delirium tremens. The tremor, in these cases, occurs particularly when an effort is made, and is not lessened by an effort. It is not lessened by support; and generally the cause is obvious. Many old writers have made this distinction;—Galen, Sauvages, and others; yet I believe paralysis agitans was not well characterized, until Mr. Parkinson wrote his pamphlet on it, in 1817.

Mr. Parkinson gives only one post mortem examination; and that was a very severe case, where the disease was universal; where there was great muscular debility, impediment of speech, and, at last, impairment of intellect. He found, in that case, the lingual and brachial nerves tendinous; that is to say, greatly indurated; the medulla oblongata and pons varolii were very compact and large; and the medulla cervicalis (the cervical part of the spinal marrow) was hardened.

This is a very obstinate disease; and I have no doubt its obstinacy arises, generally, from there being an organic affection. Mr. Parkinson imagines the disease to exist in the superior part of the cervical medulla spinalis, extending upwards to the medulla oblongata; and he suggests antiphlogistic measures, directed particularly to this

part. I have not been, by any means, successful in the treatment of this disease. I believe, when it occurs in old people, (where one hand shakes, or the head), you can do no good;—at least I have never known good done. Where it has occurred pretty universally, I have never been able to cure but one case; and, in that instance the patient was not old;—he was not above five-and-thirty years of age; and I am satisfied there was no organic disease; whereas in old persons, I should think, there is organic disease;—probably induration; or, at least, a process going on which *leads* to induration. This man, who was in the middle period of life, was not likely to suffer from structural change, unless it were induced by inflammation. There was pain of the head, heat of the head, and giddiness; and, therefore, I treated him antiphlogistically. I bled him well, blistered, mercurialized, and starved him; and he had setons introduced; but all without any benefit. Finding, after a long trial, that the plan did no good, I gave him zinc; which is a very useful remedy in St. Vitus's dance. He took a considerable quantity, three times a day; but without any benefit; and I then exhibited sub-carbonate of iron, under the employment of which he became perfectly well; and remained so for some time afterwards. I have since had four or five cases of the disease under my care; and have exhibited the same medicine; but it has not produced the least benefit. Most of the cases remained unaffected by the remedy. One or two were certainly a little improved, for a time; but nothing farther.

You will, now and then, see the disease occurring in young persons in a transient slight form, not connected with any organic affection; but appearing to be in females an hysterical affection, and in males to depend on congestion of the head. I have seen several young adults, who have had a shaking of one arm or hand; which has been cured by purging them frequently, and using antiphlogistic remedies directed particularly to the head. You may cure that form of the disease very well; but when it occurs in the decline of life, I believe you will find it an obstinate affection;—at least, I have hitherto found it perfectly incurable.

CHOREA.

The next disease of which I shall speak, is very much allied to paralysis agitans; so far as it consists of irregular, slight, convulsive motions; and is unattended by any serious disturbance of the intellect, unless it continues for a very great length of time; but it is one which occurs, on the contrary, in young persons. It is called *St. Vitus's Dance*; and has received that name, I believe, from there being a chapel, dedicated to St. Vitus, where persons went and danced, when they had this disease, (or something like it), till they dropped down exhausted; and so, it is said, became cured.

I need not say that the Latin word "*chorea*," comes from the Greek word χορεια. There is the best authority for calling it

"*chorea*," and not "*corea*." You find Virgil using the latter word; but it is only a poetical license; and the proper one is "*chorea*." This disease is characterized by a catching of the fingers and other joints, a twitching of the head, corrugations and contortions of the face, very extensive flexions, extensions, and rotations of the extremities;—in short, by perpetual motion, with a rolling of the eyes. The patient is observed, in the first instance, to drag one foot; and, frequently, there are such catches of the tongue, and of the muscles of the neck and throat, that articulation, deglutition, and mastication, are difficult; and so likewise is walking, standing, sitting, or lying. I have seen the skin of the chin and breast rubbed off, by the perpetual scraping of the one on the other. I have sometimes seen the patient, unable to lie on the bed, rolling off it; so that it was necessary to strap him down. These, however, were very severe cases. As to feeding patients, that is often very difficult; and it will sometimes require the aid of two or three people, to give them their meals;—two to hold them still, and one to catch the favourable opportunity of putting the spoon into their mouths. You will find the motion increased temporarily by fear, or any gentle motion. Nothing is more common than for the motion to increase when a medical man appears. Any mental agitation will have the same effect. If a child be made cross, the motions will double almost directly. These motions are a little under the power of the will; persons can restrain them temporarily, but their best effort in the disease is little more than a sudden catch.

You will find that persons walk quickly better than slow; and Dr. Heberden mentions the case of one individual, who could not *walk*, though he could *run*. Exactly as in paralysis agitans, the movements are suspended during sleep, unless in extreme cases. If you hold one part, then another is agitated the more; and, generally, one side is more affected than the other. You find this very common in all convulsive diseases; and, indeed, in diseases of *sense* as well as of *motion*. In many of these diseases, it is common to see only one side affected; but where both are attacked, it is usual to see one more affected than the other. This circumstance occurs in St. Vitus's dance; and the side most affected will, in the progress of the disease, frequently change; so that the *right*, at one time, shall be most affected; and, at another, the *left*.

One leg and one foot generally first shew the disease. The arms are generally more affected than the legs. The face has very frequently a fatuitous appearance; the mind is apparently a little affected; and persons are certainly a little childish in this disease. The pulse is sometimes very quick, when the motions are very rapid; and sometimes you will observe headache, heat of the head, vertigo, and drowsiness. Sometimes patients will scream, and even epilepsy will come on; and sometimes there is hardness of the abdomen; but, in a large number of cases, you find no one symptom present;—you find nothing the matter with the patient, except this extraordinary movement. You may meet with additional symptoms; but,

in a great number of instances that I have seen, such has not been the case.

It is a disease that may last some weeks, or some months; and then go off by art, or spontaneously. Now and then it continues during life; but the majority of patients recover; and even regain their looks. The fatuitous aspect of countenance, and the imbecility of mind, disappear. In a local form, this disease will continue for life. You will observe many persons, who always have a catching of one leg, or one arm; or a catching of some of the muscles of the face. Some are always winking; some have an extraordinary motion; they run their head upon you like a goat; and some throw their head down; so that they have been a great inconvenience to auctioneers, who imagined they were bidding. You must have seen many persons, with these unfortunate local forms of the disease. When it is so local, it almost always continues for life; and you will see it run in families. I have observed that, where one part of a family has these catches, another has something else peculiar in the nervous system. That is very common. When the disease occurs in adults, I believe it is seldom cured;—at least I have seldom seen it cease. It is where it occurs universally, and in very young adults, that it is cured. It is hardly a proper mode of speaking to say, that the disease may terminate fatally; but that state of the nervous system which produces it, may end in death. I recollect a case, in a strapping girl about nineteen, which ended fatally. She did not die of St. Vitus's dance, but of apoplexy. The congestion of the head, which in one degree produced chorea, in another gave rise to apoplexy; and pathologically it could not be said she died *of* the disease, but *in* the disease. It was an affecting circumstance; and I have no doubt might have been prevented, had she been well bled and purged.

This is a disease which occurs, chiefly, between three or four years of age, and fourteen. Dr. Heberden says it is most frequent between the ages of *ten* and fourteen; but my experience leads me to say from *three* or *four* years to fourteen. It occurs, too, more frequently in girls than in boys. Dr. Heberden says, that one-fourth only of the patients under his care were males; and that has been about the proportion I have met with;—at least, in 1826, I looked over my cases of this disease; and found that, in the hospital, I had had seventeen patients altogether; and twelve of them were girls, three were boys, and the rest were adults. I may mention that, at the same time, I looked over my cases of epilepsy; and found they were just the reverse;—that out of twenty-five cases of epilepsy, nineteen of the patients were males. Dr. Heberden made the same observation. I found, in 1829, that I had had altogether thirty patients labouring under St. Vitus's dance; and twenty-two of them were females, and eight males;—about the same proportion as in 1826. With respect to epilepsy, I found that in 1829, out of thirty-seven patients, twenty-seven had been males.

The tendency of this disease is constitutional, if not hereditary. I

do not know that it is hereditary; because adults, frequently, cannot tell whether they had St. Vitus's dance when they were young or not; but it is very common to see two or three children in a family have it;—not at the same time, but at different periods. You will observe that it affects all sorts of children;—those who are pale and sickly, and those who are ruddy. It frequently affects those who are otherwise in perfect health, and generally there is no obvious cause. Generally, one sees no cause of predisposition; and can discover no cause that excited it. All I can make of it is, that it is a morbid excitability of a certain portion of the centre of the nervous system, (the medulla obligata or spinal marrow), with which the nerves of voluntary motion are connected; but not a sufficient irritation to produce that violent action which characterizes tetanus. As to its being inflammatory, almost every case may be cured, not by antiphlogistic measures, but by those which are just the reverse. It has been said to arise from an irritation of the alimentary canal; but I am quite sure that, in nine cases out of ten, (I might almost say *nineteen* out of *twenty*), the alimentary canal is healthy. If the cure arose from purging, the fæces would be unhealthy. Now and then a distant existing cause may be found; but I have never been able to discover any, except in one instance; where it came on after a discharge from the thigh had been suppressed. A scrofulous sore had continued in the thigh for some time; and when this healed up, St. Vitus's dance began. Whether it was accidental or not, I cannot tell; but it was not cured by re-exciting the discharge, but by iron; and that with the greatest rapidity.

The proximate cause, I have no doubt, is seated in the head, as well as the spinal marrow; for the very highest nerves are affected. The eyes roll; the very highest muscle of the body (the corrugator supercilii) is affected; the countenance is fatuitous; and the mind is frequently a little impaired. Now and then it is unquestionably true, that you have constipation; and now and then it is unquestionably true, that you have headache and throbbing; but these form only a very small proportion of the cases.

With regard to treatment, if you find drowsiness, headache, or heat of the head, you ought to purge the patient well, take away blood either by the arm or by leeches, and treat it as a case of congestion, or an inflammatory state of the head. It is a much shorter mode to apply leeches to the head, and take away blood from the arm, than to go on with purging. Purging is good; but it is a roundabout way of affecting the head; and if there be much congestion of that organ, it is the best way to take blood from it directly. Sydenham's practice was to take away blood from the arm and purge; but what his success was I do not know. It was rather a violent practice, in many cases; and I am quite sure that, in a great number of instances, neither bleeding nor purging is required; yet if bleeding and purging had been practised in the case where apoplexy supervened, there is a probability that the patient would have lost her St. Vitus's dance, and not have become apoplectic.

If there be costiveness, it is our duty to remove it; if there be pain of the abdomen on pressure, besides emptying the bowels, we ought to try the common remedies of inflammation. There can be no doubt that purgatives will sometimes cure the disease; sometimes by relieving a loaded state of the alimentary canal; and, in other cases, by circuitously emptying the head. But purgatives very often fail; I have failed with them again and again. Children are continually brought to us after they have been well purged; and yet they are none the better for it. An inflammatory or congested state of the head, is by no means more necessary to this disease, than it is to hydrophobia or tetanus; but it is always right to look out for congestion, and an inflammatory state, and to remedy them if found.

My reason for maintaining that the disease is not essentially inflammatory, and that, more frequently than otherwise, it is a mere morbid irritability, is this;—that tonics are the best remedies. Sulphate of zinc will cure a very large number of cases; and it may be given to a very considerable quantity. You may begin with a grain, in the form of a pill; but you must not exhibit it on an empty stomach, but after meals; and, in many cases, you may increase it to six, seven, or eight grains. I have given to adults from twenty to twenty-five grains, three or four times a day; but children will bear six, seven, or eight grains, three or four times a day without nausea. This is not a newly discovered fact. You will find it mentioned, long ago, that these doses may be given in epilepsy, without nauseating. The circumstance is ascribed, by Dr. Good, to the insensibility of the stomach in epilepsy; but there is no reason for supposing that to be the cause; for it is now proved that persons in health, with no insensibility of stomach, will take it in these quantities, if you begin with a grain first, and gradually increase it every day. I cannot doubt the fact; because I have given it in this quantity, and seen others exhibit it, over and over again.

The sulphate, and other preparations of copper, will cure the disease; and so also will the nitrate of silver; but the latter is an objectionable remedy, on account of its producing a discolouration of the skin. The subcarbonate of iron has, undoubtedly, very great power over the disease. I have had, I should suppose, forty cases in succession, all cured by this remedy. Perseverance is sometimes required; but I never had a case occurring in a child, where it was fully given, that the patient was not cured; though I have never cured a case in adults, where the disease was quite local,—situated in the head or arm. When cases occur in children, they generally become better, and the disease gradually ceases. I have not yet met with a single failure. I have had five cases this year; and all of them have been cured. In one, after it had been cured, the child had fever; and during the excitement of fever it returned. The child was brought to me last week; and the disease has not yet disappeared. In general, the affection disappears when the remedy has been given about six weeks or two months; but I have had some obstinate cases, where it was necessary to continue it twelve weeks.

I believe that a large dose will sometimes cure it where a small one fails; but I should not give a large dose, where a small one would do; but if that would not answer, rather than give it up, I would double the quantity. Children generally like it; and, after a time, they ask for it; because I exhibit it in double its weight of treacle. Generally there is no necessity to give purgatives. I have seen headache, drowsiness, and giddiness disappear, under the use of this remedy;—an occurrence which you would not *a priori* expect; but if there be much heaviness of the head, I should employ leeches instead of giving this remedy;—at least at first. Some have an idea that if you purge the patient well first, and then give the remedy, it answers better; but I have not seen that to be the case.

The oil of turpentine has sometimes been used with success; and some say colchicum. Electricity along the spine, the cold bath, the shower bath, hot and cold baths in succession, and musk, will undoubtedly do good in the disease; and will now and then cure it; but I have tried most of them, and never found any thing so useful as the subcarbonate of iron. I never tried the sulphate of iron but once; and in that child the disease gave way. I may mention that the child was plethoric, and yet the disease gave way. It is right to continue the iron, for some time after the disease is cured; for, if you do not, the disease is very likely to return.

LEAPING AGUE.

The above is the common form of the disease; but, now and then, persons have it in another form, so that they dance or leap; and then it is called *leaping ague.* Perhaps it is called *ague* from not being constant;—but coming on in paroxysm. This form of the disease has been very frequent in the northern parts of Scotland; and also in Germany, and some other places. In this form of the affection, persons will sometimes run, with extraordinary facility, over dangerous places. If they have a place fixed in their imagination, they will dart forward towards it; and on arriving at it, they will drop down exhausted. Horstius states that certain women in Germany, were affected with restlessness of body, and disorder of mind; and went annually to the chapel of St. Vitus near Ulm; where they danced, night and day, till they dropped down exhausted. They then remained well till the following May; when the affection returned, and they went through the same ceremony. It is from this circumstance that the common form of the disease is called *St. Vitus's dance.* The French call it the dance of St. Guy; but, not being a Catholic, I do not know who St. Guy was. Sometimes it is said that a roll on the drum gives persons this tendency to dance; and that it is assuaged by music;—just like fits of dancing in chorea. Some do not believe that the beating of the roll has much power; but that the effect results from the motions of the body, arising from the excited state of the feelings; just like the other form of the disease which I have mentioned.

In this extraordinary form of the disease, some will climb in a very

singular manner; others will have fits of rolling; others fits of leaping; others will whirl round; others will tumble regularly; and others will spring and dart forwards, in any direction, to a given spot. Paroxysms of this kind will sometimes come on daily, or even oftener; and sometimes not so often. Occasionally they have been observed to be periodical to the minute; and, as in common chorea, this affection is somewhat under the will. It is a strong desire for motion; and a pleasure in yielding to it; but a strong effort will produce a little diminution of the motion. You will find a curious case of this kind, (occurring in a woman), given by Dr. Watts, of Glasgow, in the fifth volume of the "Medico Chirurgical Transactions." In this woman, there were various movements at different times; and he states that he witnessed them himself. He says that she would roll over, fifty or sixty time in a minute; and would be sometimes seized with tetanic rigidity; but that she was conscious of her own existence during these fits. In the seventh volume of the same Transactions, you will find a case mentioned by a very eminent surgeon lately dead;—Mr. Kinder Wood; and which likewise occurred in a female. She had violent fits of dancing; and it was observed by some one, that, when dancing, she struck the table, and every thing that came in her way, in regular time; and that she danced in very good time. A drum was procured, and a man beat it to the time in which she danced; and she immediately turned towards it, and danced up to it; but when the drum was beat in a roll, or out of time, instantly her dance was stopped. It was not known that she had ever danced before; but she now danced in regular time, and very gracefully;—showing an infinite variety of steps. Beating the drum suddenly in a roll, or a little out of time, always stopped her; and by perseverance in this plan, whenever she began to dance, she was cured. This repeated interruption at last broke the chain. She was sensible during the paroxysm; and between the paroxysms she nursed her child, and attended to her household affairs, and had a great wish for her recovery. All the account she could give of it was, that she had a tune in her mind, which irresistibly compelled her to dance. Occasionally there are these motions, without any musical ideas whatever; and occasionally patients have involuntary musical ideas;—causing them to hum a tune, without any motion taking place in accordance with it.

When these cases occurred formerly, they were ascribed to witchcraft. A case of this description occurred in Renfrewshire in Scotland, in 1696; and the ministers watched the patient in turn. A commission was appointed by government, to examine into the business, and was signed by eleven privy councillors; and it was declared that she was bewitched. A warrant was granted, and several persons were apprehended, and afterwards brought to trial, for having bewitched her. After six hours' deliberation of the jury, three men and four women were found guilty; and were condemned to be burned for having caused the disease; and the sentence was actually executed at Paisley, on the tenth of June, 1697. You will

find a case exactly like this, but not ascribed to witchcraft, in the "Edinburgh Medical Journal" for 1829.

All these singular nervous affections, were formerly ascribed to witchcraft; and you find Bishop Jewel, in a sermon preached before Queen Elizabeth, saying:—"It may please your Grace to understand, that this kind of people, (I meane witches and sorcerers), within these last few years, are marvellously increased within this your Grace's realme. These eies have seene most evident and manifest marks of their wickedness. Your Grace's subjects pine away, even unto the death;—their collour fadeth; their flesh rotteth; their speech is benummed; their senses are bereft. Wherefore your poore subjects' most humble petition unto your Highnesse is, that the lawes touching such malefactors may be put in due execution. For the whole of them is great; their doings horrible; their malice intollerable; the examples most miserable. And I pray God they never practise further than upon the subject." In the next session a bill was brought into parliament for making witchcraft felony; and those who know anything of history, must be aware that thousands of victims were sacrificed. A number of diseases, and other calamities, were ascribed especially to witchcraft.

There is an account, in the "Ephemerides," of a girl who sprang up while in a horizontal posture, and came down again. The mother consulted a medical man; and he told her he could do nothing for her. He attributed it to the devil; and directed her to go to a clergyman. Voltaire says, that the greatest enemies the devil has are the doctors;—that it is the doctors who do away with one half of his dominions;—so much was formerly ascribed to him, and to those connected with him. One has some clue, I think, to these motions, in the experiments of Magendie. He says that if the white matter of both corpora striata be cut, the animal darts forward; or, if this be prevented, it still retains a progressive attitude. He says that if the crura cerebelli or the pons varolii be cut, from before backwards, an animal rolls over sixty times in a minute. That I have witnessed myself. He likewise states, that if you cut vertically from the crura cerebelli, through the arch of the fourth ventricle, it has the same effect; and the motion is more rapid, as the section is nearer that point. He says that an animal continued rolling after it was cut. If incisions have this effect, one may easily conceive that a certain local affection may have a similar effect in being the cause of this disease. In some persons there has been seen a mere propensity to rush forward or backwards. Such cases are on record.

Some of these affections are clearly the result of mere excitement of mind;—some violent passion. Sometimes they arise from witnessing other people under the disease; but occasionally they do appear to arise from certain causes within the nervous system itself, independently of all external circumstances. When, however, they arise merely from external circumstances, you see a large number of cases together; and in Germany they have been epidemic;—that is to say, they have affected a large number of people at a time.

When these cases are sporadic, one would treat them like St. Vitus's dance, and I have no doubt they would be cured in the same way. When they are epidemic, one ought to have recourse to mental measures. We should separate the patients; and not allow one to be excited by seeing another. Strong corporeal measures can be of little use; and medicine must be out of the question; but when these cases do occur without any external excitement, from simple irritation, (although I never had such a case), I have no doubt that the cold-bath, oil of turpentine, and those things which cure common St. Vitus's dance, will also cure this affection.

EPILEPSY.

The disease next to be spoken of is *epilepsy*. Those affections which I have considered subsequently to common phrenitis, have been characterised by an excess of sensibility, or an excess of motion,—hydrophobia and neuralgia being an excess of *sensibility*; tetanus, chorea, and paralysis agitans an excess of *motion*. The disease now to be considered are also characterized by an excess of motion; but, besides that, there is deficient sensibility in one respect; —there is stupor. When I have considered these affections, I shall proceed to those in which there is deficiency only; for instance, apoplexy and paralysis. The present forms an intermediate link, between those characterized by an *excess* of sensibility or motion, on the one hand; and, on the other, those in which there is a *deficiency* of both.

In epilepsy, there are fits of a sudden loss of sense, with convulsions of the voluntary muscles; and the former (that is to say, the loss of sense) continues after the convulsions have ceased; so that a person is said to go to sleep after the fit. The fact is, the convulsions cease before the loss of sense terminates. In the fit, the countenence is gastly and pale, or perhaps of a bluish red; it is somtimes sallow. You observe that the lips are livid; that the neck and the cheeks are much swollen; and that perhaps the whole body, is bedewed with sweet; but especially the head and cheeks. There is foaming at the mouth; and generally the tongue is bitten. There are universal violent convulsions, horrid grimaces, a rolling of the eyes, and dilatation of the pupils. Sometimes it happens that the urine and fæces are discharged involuntarily;—the urine most frequently; and occasionally there is a discharge even of semen, with or without an erection;—I do not know which; but it is certain that some people suffer a discharge of semen in the paroxysms. The hands are generally clenched in the fit; and if you observe the heart, you find it palpitating strongly. The pulse is quick; and the respiration is short, deep, and irregular.

When the patient wakes from the state of sopor, he has generally no recollection of what has passed; and perhaps, therefore, there is no suffering. The want of *recollection* of suffering, is no proof that there has been *no* suffering; for we have all suffered enough in cutting our teeth, and we know nothing of it now; and

so it may happen respecting more recent events. The fit may be attended with more or less suffering; and yet the individual may not be aware of it afterwards; but I should think there was no suffering; and for this reason;—persons do not suffer, in general, when they are hung. Although the individual may struggle, and although he may be all but dead, and may hang so long as to be insensible, it does not appear that there is any suffering. There is an account in Lord Bacon's works, of a person who was hung, and all but killed; and yet he did not suffer. There is a short account written by Cowper, the poet, from which it appears that he three times attempted to commit suicide; and one of these attempts was by suspension. The account was written by himself, and was found among his manuscripts. It is very scarce, on account of its having been bought up, because it ought not to have been published. He there mentions, that he suspended himself over his chamber door, in the Temple; and became perfectly insensible. He only recollected a flash of light appearing before his eyes. His weight at last caused him to drop on the floor, where he was found; and, after a time, he recovered. He says that, although he was thus in the jaws of death, and had become perfectly insensible, yet he had no previous suffering; and therefore, as there was no suffering in that state, it is probable that there is no suffering in epilepsy;—that there is such a state of insensibility that nothing is experienced. I should suppose that, in drowning, there is no suffering, if it occur at once. Shakspeare's expression is,—

"Oh Lord! methought what pain it was to drown;"

but there is no reason to suppose there is pain, if the individual go down and do not come up again; but if he come out of the water, the suffering is dreadful.

The convulsions of epilepsy may last from a moment, to fifteen minutes or more; and sometimes they recur after they have ceased, before the sopor is over. The sopor, or coma, is generally complete, both during the convulsions, and for some time subsequently; but not always. This, therefore, is the character of epilepsy;—a sudden attack of convulsions of the voluntary muscles, together with insensibility;—the insensibility continuing after the convulsions have ceased.

The name of the disease is given to it from the suddenness of the seizure; from *επιλαμβανω, to seize upon.* It is also called, in Latin, *morbus comitialis*; because if a person in the commission of the Romans was seized with the disease, it was considered a bad omen, and the commission was dissolved. It is also called *morbus sputa*;—"the spitting disease;" from the custom of spitting into the bosom, to avert the unfavourable omen. The Romans were remarkably superstitious; and fancied it was a sign of ill luck to be seized with a fit; and therefore they spit into their bosoms, to save themselves from something pernicious, or to do good to the patient. In common language it is called the *falling sickness*; and now that the

lower orders have got hold of fine names, they call it all sorts of things. The Jews ascribed it to the influence of demons; and you find it indicated in the New Testament; where persons are said to have been suddenly seized by an evil spirit, and to have fallen into the water or fire; because a patient who is liable to the disease may be near fire or water, and he will fall into the one or the other.*

You will find a circumstance in this disease, which I mentioned as occurring frequently in all diseases of the nervous system; namely, that it occurs more on one side than on the other. I mentioned that paralysis frequently does so; St. Vitus's dance affects one side more than the other; epilepsy does the same; and we shall see that hysteria likewise has the same tendency. The fits of the disease most frequently occur during sleep, or in the state intermediate between sleeping and waking, when we all experience a little delirium. If we fall asleep, in a *moment*, from a waking state, there is no delirium; but if we *fall* asleep *gradually*, the mind wanders. If you wake *suddenly* there is nothing of the kind; but if you wake very *slowly*, then again a little delirium is experienced. We are more accustomed, however, to *go to sleep* gradually, than to *wake* so; and therefore the delirium which you observe, is far more common in going to sleep, than in waking. Now it is at the instant when a person is neither in full action nor at complete rest, that epilepsy particularly attacks him. You find a great number of persons have a fit, just when they are going to sleep, or when they awake;—many have it when they are asleep; and again, some only have it either when they are going to sleep, or when they are about to wake.

Occasionally the patient has no warning whatever; and has no knowledge of the fit. I have seen many persons who are not at all aware that they have fits. These have been persons in the decline of life, who are in the habit of sitting in the house;—not going about so as to run the chance of being injured; and who have been watched by the rest of the family. I have known them have fits for years; and yet they have not been aware of it;—at least they *pretended* they were not. The individual has been seized in a moment; and has afterwards wondered what has been the matter. But some persons have good warning. Some, previously to the attack, have vertigo and headache, sufficient to shew that they are going to have it. Sometimes there is just vertigo enough, and no more, to enable them to escape from danger. Some have headache, a day or two before the vertigo; but some have vertigo only just in sufficient time to make them get out of the dangerous situation in which they are placed. Occasionally, a spectre has been seen at the moment of the fit;—an image has passed before the mind, before the fit took

* "There came to Him a certain man, kneeling down to Him, and saying,—'Lord, have mercy on my son; for he is lunatic and sore vexed! For oftimes he falleth into the fire, and oft into the water.' And Jesus rebuked the devil; and he departed out of him; and the child was cured from that very hour."—Matthew XVII, 14—18.

place. I recollect that Dr. Gregory used to mention, in his lectures, that he knew a patient who, before the fit, saw a little old woman come out of the corner with a stick; and when she approached and struck him, down he fell in a paroxysm. It is a mental delusion of the moment, produced by an excitemen of the brain. I believe the fact is mentioned by Sir Walter Scott, in his book on Demonology;—not, by the way, one of the best he has written.*

Sometimes, before the fit, there is a warning, occasioned by a sensation of tickling, or crawling, along the surface of the body. There is a sensation as if fluid were creeping from the fingers, or from the thighs, towards the trunk; and sometimes as though a spider or flea were creeping over the skin. When it appears like fluid, it is generally like *cold* fluid. This has been ascribed to a sort of rush of air or wind, and has been called *aura*; and being connected with the epilepsy, it is called *aura epileptica*. It does not follow the course of particular nerves. It appears to reside in the skin; and there is certainly no connexion whatever between it and the naurilema of the part. I have seen several instances of this affection; and I made a note of one case, in 1826. A boy had a sensation of two auræ; which ran along the dorsum of the foot, up the front of the legs and thighs. Each stream ran up the trunk, and they met at the epigastrium; and then it seemed as if there were five streams, running from the two up the trunk. As soon as the auræ got to the epigastrium, down he fell. He compared the sensation, which was very rapid, to that of the creeping of a spider. I had another case of the same kind, in May, 1826.

You will sometimes notice that, before the fit, the patient utters a loud scream. He is not aware of any suffering that occasions him to do it; but only says that he cannot help screaming. You sometimes find that the patient has a warning during the *first* fits; but when he has been long subject to the disease, *no* warning takes place. Sometimes, after a fit, not only will a patient forget it, but no symptom remains; but, on the other hand, people will occasionally be subject, for some days, to headache and sleepiness. Sometimes these symptoms only remain a few hours; but in other cases they will remain a few days. You will occasionally find the fits very numerous at first; but gradually they become less so. While, however, they become less numerous, they generally become more severe, and last longer. I think, in the majority of cases, the fits are most frequent at first; so that a person will have a dozen or twenty in a day; but as they become fewer, I have generally observed them last longer, and the severity is greater. Occasionally I know the reverse takes place;—they are not so numerous at first. Some have but one fit for many years;—an interval of many years will occur between the fits; and, so far as I know, some have but one fit during life. Persons have had one solitary epileptic fit, from some temporary cause; and the disease has never recurred.

* "Letters on Demonology and Witchcraft; addressed to J. G. Lockhart, Esq. By Sir Walter Scott, Bart."

If the disease have continued long, and the fits have not been very infrequent, the mind generally becomes impaired; but if the disease have continued long, and yet the fits have not recurred except at long intervals, then the mind is not impaired. It does not necessarily follow, that the mind should be impaired; but usually, if the disease last a long time, and the paroxysms are not very infrequent, you find impairment take place. The reason is simply this; —the disease of the brain, which gives rise to these fits, at last disturbs other functions. It is not the *epilepsy* that causes it; but the *cause* of the epilepsy impresses other parts of the brain. That the disease, however, does not necessarily impair the mind, is shewn by the example of Julius Cæsar, and Napoleon; both of whom, we are told, were subject to it.

It is very common for diseases of the nervous system to be united together;—one, two, or more; and therefore you find, in illustration of this observation, that epilepsy frequently occurs in chorea, in hysteria, in insanity, in idiotism, and not unfrequently in palsy;—that is to say, the pathological state of the brain or spinal marrow, or both, will produce sometimes one symptom, and sometimes another. The disease may be such, as to extend from one portion to another, and to affect various parts. This union of different diseases of the nervous system, is almost always seen. In St. Vitus's dance, there is a peculiar constitution of the mind,—a little fatuity. Apoplexy and palsy you see united every day; and apoplexy is the common termination of many diseases of the nervous system;—of insanity, for example. You may have these different nervous diseases coexisting or succeeding each other.

There is a great variety in epilepsy. That which I have just described is the most common form; but there are very great varieties; so that persons may quarrel about the definition, if they choose; and say that such and such forms are not epilepsy. If you define epilepsy to be a *complete* loss of sense, with *general* convulsions, then an *incomplete* loss of sense, or *partial* convulsions, is not to be considered epilepsy. But it is not wise to quarrel about terms, in this way, so long as we understand what is meant by them.

It will sometimes happen that there is decided insensibility *before* the convulsions take place; and that *during* the convulsions, the person becomes more or less sensible. This is one form in which the disease appears. You will occasionally see patients without convulsions at all;—they will simply fall down in a state of insensibility, and rise up again without knowing what is the matter with them. Occasionally, instead of these convulsions occurring throughout the body, they are confined to one side; and sometimes they are still more partial; being confined to one extremity. Sometimes, instead of convulsions, you have mere tremor of the body; or part of the body will shake violently. Occasionally, during the fit, there is delirium. The person shews that he is not insensible; but instead of being insensible, he is in a state of violent delirium;—apparently in an alarming condition; although in general, I believe, there is no

danger at all. Sometimes they have this delirium on recovering from a comatose state;—they have coma, and after that delirium. Occasionally the disease assumes the form of partial tetanus; one-half of the body being in a state of the most intense spasmodic rigidity. I have seen two cases of this, where the person was seized, at the moment of the convulsions, with a spasm of one-half of the body, attended with the most excruciating pain. One arm and one leg have been drawn up; yet there has been no danger in it; and the nature of the case has been shewn very plainly, by the next paroxysm being epileptic.

Sometimes there is a variety in what occurs in this respect;—a person is insensible to all around him; and yet has, before the fit, no *internal* unconsciousness. I have seen several instances where, before the fit, the patient became unconscious of external objects; —that is to say, the comatose state came on before the convulsions; but in that apparently comatose state (a state of sopor in which there was no perception of any thing around) the patient was internally in a state of activity; and that condition is called *ecstasis.* When a person suddenly becomes insensible to all around him, and yet the mind is in a state of activity without being aware of what he is about, it is called *ecstasis*;—whether it be united with epilepsy or or not. In this state, people sometimes walk, dress themselves, and even compose poetry; and yet they have no knowledge of it. If they be awakened in this condition, they are alarmed; or, at least, they are surprised at this situation in which they are placed. Sometimes they recollect it all;—just as we recollect a dream. Sometimes we may remember a dream, but sometimes we have no knowledge of it; while those near us see that we have been dreaming. So it is in this state of ecstasy, which consists in the mind being internally active. Sometimes the paroxysms are not quite complete; so that a person is half aware of what is going on about him. If the patients be in a situation where they have frequently been before, and have become habituated to it, they have been known to walk over difficult places, where there was the greatest danger, with impunity. These places, however, were well known to them; so that habit influenced their motions. Sometimes, however, the activity of the mind is so imperfect, that they know where the window is, and how to open it, yet they forget that there is the street beyond the window; and they step out, and are dashed to pieces. This all arises from an imperfect activity of mind. This state of ecstasis is nothing more than active dreaming. In dreaming, we are often active, reason correctly, and even compose poetry; but in this state of ecstasis, more is done than that;—persons will compose to a great extent, reason accurately, and perform voluntary motion, so as to go from one place to another, and do many things; and yet, for the most part, they will be ignorant of it. I had a patient who had this ecstasis before the paroxysm of epilepsy. She was a girl, and subject to epilepsy; and, before she fell down, she was insensible to all around her; but in the state of insensibility she used to hum "Robin

Adair," and "Home, sweet home," so correctly, that none could find fault with her; but she was quite unconscious of it. After this the paroxysms came on; but she still remained insensible. The activity of the mind ceased; she became unconscious internally as well as externally; and the convulsions then came on. I had another patient, more religiously and devoutly disposed; and she always sung *hymns*;—not *songs*, such as "Robin Adair;" and she also sung in good time, so that no fault could be found with her.

Dr. Darwin considered this somnambulism, or "walking in the sleep," (which is only an imperfect degree of sleep), to be an epileptic disease. Whether it is *true* epilepsy or not, is another thing; but he considered it to belong to the family of epileptic affections. Dr. Prichard, of Bristol, (whose work on nervous diseases is well worth reading), considers walking in the sleep and ecstasis, to be both of an epileptic character.* If a person be *asleep*, and be seized with a partial consciousness, and partial voluntary power, it is called *somnambulism*; but if he be seized in a *waking* state, then it is called *ecstasis*. It is the same state; only it may begin when you are *asleep*, by a degree of *activity*; or when you are *awake*, by a degree of *insensibility*. They come exactly to the same thing. They frequently occur without epilepsy; but they are frequently united with it.

Even the night-mare is considered by some as allied to epilepsy;—as a very slight imperfect degree of epilepsy. In the night-mare, which is technically called *incubus* (from "incubo," *to sit upon*), there is a degree of sense, but a deceptive feeling; generally some unpleasant dreams, and more or less loss of volition. You cannot make the effort you wish. You have a strong desire to make a muscular effort; but you cannot. It is actually only a variety of somnambulism; and when the paroxysm ceases, you can make a voluntary effort; and it is imagined you get rid of the night-mare by making the effort, whereas the effort is made because the diseased state ceases. I think it is a little degree of epileptic affection. There can be no doubt that it is a cerebral affection; and it may arise from eating suppers, and from other causes. It is singular that there is one house in the country, where I always have the night-mare; and in my own case the spectre has taken the shape of a devil, with a colour like that of oil-skin. The house is that of a friend of mine. I repeatedly changed my bed-room; and at last I did not go to bed at all, but slept in the drawing-room. Still, however, I had the night-mare. I do not know the reason. Possibly it was going from London, partaking of a late dinner, eating more than I should, being cheerful from seeing my friends, and then going to bed. Certain it is that in that house, for four or five years, I regularly had the night-mare.

The state of ecstasis I have described, precedes the commencement of the fit; and I believe it sometimes takes place *after* the fit; but other varieties take place in the fit itself. I mentioned that, some-

* "Treatise on Diseases of the Nervous System; by J. C. Prichard, M.D."

times, the coma ceased as soon as the convulsions; and in some people you may have coma without convulsions at all; and that is a kind of epilepsy which is frequently mistaken for apoplexy. Many persons are said to have twenty fits of apoplexy, when they have never had one. Old people will fall down senseless; and will get up again, just as if nothing had happened; and if a practitioner be near, he bleeds them; and a cure of apoplexy is thought to be effected; but there is no reason to suppose that it is any such thing. It appears to be only imperfect epilepsy;—epilepsy without convulsions; and for this reason;—there is no stertorous breathing whatever; no harm arises from it; and such persons very frequently, sooner or later, have regular epilepsy. You will sometimes see this in a slight degree; so that persons will not lose themselves entirely. They feel that they are going; they catch hold of something; and they are right again. It is, no doubt, an imperfect form of epilepsy. The coma is not fully formed;—lasting only a few moments. I have known this occur; and then the coma to last longer, and be more perfect; till, after some years, the coma has been joined with convulsions; so that I have no doubt elderly persons (and sometimes it happens to young ones) fall down senseless, and come to, without suffering any consequences whatever; and have frequent attacks of it. I have no doubt it is neither more nor less than epilepsy without convulsions;—that there is an approach of insensibility; so that a person feels he is going, but takes hold of something, and recovers himself again. Occasionally you will have mere faintness produced;—not enough to make the person take hold of any thing.

The convulsions, I mentioned, are sometimes very local. Sometimes it is only an arm or a leg that is convulsed. I had a case occurring in a boy, in 1828, whose muscles at the back of his head were affected; and likewise the muscles of his eyes. He was frequently seized with a fit; which made him hold up his head, and begin winking his eyes. During this state of partial convulsions, his head was drawn back, and he was perfectly insensible; but he never dropped down. His father once fired a pistol in his ear; but the boy took not the least notice of it. He would heave a deep sigh, stir about, and be himself again. I have seen him, repeatedly, in a paroxysm of this description. He would have thirty of them in a day; stand still all the time; and be perfectly unconscious of his fit. There is a boy at this moment, in St. Thomas's Hospital, who is nearly in the same state. When he is attacked he holds his forehead, and says he is unconscious. I never saw *him* in a fit; but I have frequently seen the other boy in one. So imperfect is the fit, that if the patient be eating his dinner at the time, he continues to masticate as though the fit were not on him; but he is quite unaware of what he is doing. I had another patient, in whom the head was drawn down; and, when sitting at a table, down his head would come upon it; till his nose was beat flat, like a kidney. Before he had epilepsy, his mother said, he sat "nod, nodding," till his nose was almost as flat as the rest of his face. I have seen cases affecting

one part of the body only. I had an old lady under my care who had had hemiplegia of one side; and this side became subject to epilepsy, and was convulsed from time to time. It is useful to know these things; because you might think that a patient, in these anomalous forms of epilepsy, was suffering under some structural disease that might prove dangerous. If it be merely epilepsy, you may give a much more favourable prognosis, so far as life and death are concerned; though the prognosis in epilepsy is generally unfavourable, because you rarely can cure it.

This is a disease, which is very common in infants and young children; and it will sometimes continue till puberty, and then cease; but it will sometimes occur again, after the sexual period of life is over. I had a patient (an old lady) who informed me that she had epilepsy, when a child, every few weeks; and that the fits gradually grew rarer till puberty. During the menstruating period they ceased, and she had no fit for thirty years; but when menstruation ceased, then she had a fit every year or two;—sometimes not so often. She had pain in the occiput, for five years, before the disease returned; and, one day, she suddenly fell down dead. Here was an instance, within my own knowledge, of a person having the disease when a child; of its ceasing at puberty, and during the menstruating period; and of its beginning again, when she relapsed into her former state. Generally, when the disease lasts through life, it begins just before puberty, or about that time. Dr. Heberden not only observed this, but also states that there was no mitigation from puberty, so far as he could judge from his experience. It is generally imagined that puberty mitigates the disease or destroys it altogether; but I believe that the hopes of parents, on that point, are usually false; and that puberty does not influence it. We see it more frequently in *young* people, than in *old*. Either so many young persons die of the disease, and do not grow old, or it ends in other nervous diseases;—particularly insanity; so that, at last, the individual is put in the class of insane persons. Whatever may be the reason, we certainly see it more frequently in young, than in old people; and I suppose it arises from a variety of causes. Among epileptic people, a greater number die young than old;—that is one reason; and another is, I presume, that they fall into other diseases. Persons become fatuitous and insane; and then the epilepsy is considered only a secondary matter; and now and then it ceases altogether. Old people are most subject to that form of epilepsy, which is characterised by coma without convulsions; and which I stated was often mistaken for apoplexy.

Males are more subject to the disease, than females; except when it occurs in young children and infants. In infants, the proportion is just the same; because there is not the individual difference of constitution; but as the period of puberty arrives, and there is the distinction between the sexes, then you find it more common among males and females. I believe I stated, that I once made a calculation of the number of patients I had had with this disease. In 1829,

I found that I had had in the hospital thirty-seven patients; twenty-seven of whom were males, and only ten females. They were nearly all boys and girls; so that it is much more commonly seen in *young* persons, than in *old* ones.

With regard to the causes of the disease, we may first mention a certain hereditary predisposition. You will find this shewn, perhaps, not by brothers and sisters, and predecessors, (uncles and aunts, fathers and mothers, grandfathers and grandmothers), having had *this* disease; but by their having had other affections of the nervous system. The same state of the nervous system, will frequently not produce the same disease;—one may have epilepsy, and another some other nervous affection. When, however, you see these things in different generations, you may class them together, and consider them as the development of an hereditary predisposition. You continually see, in females, something wrong in the nervous system; but it does not produce the same effect in all. Some will have one thing, and some another. You will frequently see epilepsy conjoined with a curious form of the head: it is very often united with a deficiency of intellect,—with a deficiency of brain; and of course with fatuity, or idiocy. I may mention that "*idiocy*" is the term given to that imbicility of mind which is connate; and "*fatuity*" to that which occurs after birth. Epilepsy is frequently united with it; and is very frequently united with that form of idiocy which depends, not upon *disease* of the brain, but upon a *deficiency* of brain. You find many people have a narrow forehead;—a low forehead, sloping back; and you find them have epilepsy. This is not universal, nor indeed, *general*; for any derangement of the nervous system may produce epilepsy. Many persons are idiots, not from there being a deficiency of brain, but from the brain being of bad quality. But there is one kind which depends entirely upon a deficiency of the anterior part of the brain; that no one now can deny. Where such is the case, it is common for epilepsy to be united with it. If is very common to find a sugar-loaf form of the head in epileptic patients. Epilepsy is sometimes united with a large head. You will recollect I mentioned that the hydrocephalic man, who had ten pints of water in his head, was epileptic. Sometimes it arises from a preternaturally thick skull; and, on the other hand, you have epilepsy in the most beautifully formed head;—simply from some accidental disease in the head. However, one circumstance connected with the predisposition to epilepsy, is an idiotic form of the head;—a shallowness of brain.

Not unfrequently, then, you see this disease connected with a particular form of head; that is, with a narrow, shallow forehead. Sometimes it is connected with a head rising backwards, in a sugar-loaf form; but it is frequently seen with an exceedingly narrow, contracted, short forehead. Not that I conceive the shape of the head has any thing to do with the production of the disease; but where the brain is more or less deficient in development, very fre-

quently the patient is likewise epileptic. Epilepsy sometimes exists in chronic hydrocephalus, and various other diseases of the head; but you frequently see it in the best-formed head. There is a predisposition to it, indeed, from any cerebral disease whatever. Whatever disease may exist in the brain, the person so affected is very liable to have epilepsy. The same state which produces one disease of the brain, may (either by its intensity, or by extending to other parts) produce epilepsy. Very often, however, you will find the predisposition to this disease inexplicable. You will see a person seized with an epileptic fit, from some circumstance which will not produce it in another; and yet you may be able to discover no difference between the two individuals. It is the same with all other diseases. You see a predisposition, or an indisposition, to them, unconnected with external circumstances. You cannot tell why, for example, one person will take a contagious disease, or become affected the moment he is exposed to it, while another equally exposed escapes; and so it is, frequently, with regard to epilepsy.

If the predisposition be very strong indeed, then the slightest exciting cause will produce it; such as will scarcely more than quicken the pulse in another person. It has followed tremor;—you will find many cases of epilepsy, evidently ascribable to extreme dread. Injuries of the head (not in *one* part merely, but *any* part) will produce it. The suppression of habitual discharges, whether natural or artificial, has the same effect; and so also has the suppression of irritation. It will arise in females from a suppression of the menses; and, in males, from the suppression of an hæmorrhoidal discharge which has become habitual. It arises from the cessation of a mere irritation;—for example, from the cessation of an accustomed cutaneous disease without discharge. The cessation of gout will produce it; and also tumors, especially if situated on the head. This I mentioned in the case of phrenitis. The presence of the tumor produces inflammation of some particular part, so that epilepsy occurs; or the removal of the tumor causes a greater quantity of blood to be thrown on the brain; and thus the disease is induced. It occasionally takes place in violent fever. In fever, the brain is frequently in a state of great excitement; and epilepsy occurs. Sometimes, among other causes, it has been excited by worms in the intestines or stomach, by teething, and even by a stone in the bladder. Irritation of any part of the body whatever, if it amount to a certain point, and the person be predisposed to the disease, may produce epilepsy. There is an instance mentioned in the "Edinburgh Medical Essays," of the disease being produced by a small hard body in a nerve, at the lower end of the gastrocnemius externus muscle. The disease had existed twelve years; but on this body being removed, it entirely ceased. It is produced, as you have already seen, by inflammation of the membranes of the brain. When speaking of arachnitis, or the acute hydrocephalus of children, I mentioned that epileptic fits were very common. Poison will produce it; mineral poisons (lead, for example), and all the tribe of vegetable narcotic poisons, will

give rise to it.* Small-pox will also produce it. You will recollect I mentioned that it is common for children, at the period of the eruption of small-pox, to have epileptic fits. Dangerous hæmorrhages may produce it. When a person is almost expiring from hæmorrhage, the collapsed state of the brain, from the want of blood, excites convulsions. In some persons, sexual intercourse will produce it; so that some persons have got into considerable difficulties, from being subject to epilepsy. It is said that Napoleon had epileptic fits on such occasions; and that a serious mistake was once made; —that the wrong bell was rung; and a number of persons came into the room, who ought not to have seen him in that situation. I do not vouch for the truth of the circumstance; but it is certain that he was subject to epilepsy, and that he had it on these occasions;—not on *every* occasion of the kind; but at periods of particular excitement. Imitation will produce it, especially in females. If they see it in others, they are prone to fall into the same state.

You thus see that any violent irritation, whether mental or corporeal, in whatever part of the body it is situated, may produce this disease. Mere inflammation of the brain, or injury of any part of the head, may cause it, when there has been no disposition to the disease before; and it may entirely cease on the cessation of inflammation within the head, or the cessation of any cause of excitement there whatever. On this account, you may frequently expect to find nothing in the head. As any irritation of any part of the body may produce it, it is not reasonable to suppose, that you must in all cases, find disease in the head. It may, however, arise from inflammation and irritation of various kinds in the head itself; and in such circumstances, you may expect to find disease in that part. Now this is just what really occurs. Sometimes, on opening epileptic persons, you find nothing at all in the brain; even when there has been no evident exciting cause at a distance. When there is an exciting cause at a distance, you cannot expect to find anything in the brain; but where you can discover *no* exciting cause at a distance,—where there is no stone in the bladder, no tumor, no worms in the intestines; but where the cause has been supposed to exist solely in the head, the disease has sometimes, and not unfrequently, disclosed nothing after death. It has appeared to be a disease of mere function; and has not produced any structural change. It is always, however, to be taken into account, that a great number of persons who open heads, are not qualified to do so;—that is, they are qualified to perform the mechanical operation of opening the head; but they are not able to say that every part is perfectly sound. It requires a man to be a good morbid anatomist, and to take great pains, before he examines the head, and declares that there is nothing at all morbid in it.

* The most complete table we have seen of these poisons, and of all others (whether animal, vegetable, or mineral), and of the diseases which they produce, is that constructed by the late Dr. Fletcher. It will be found in the Appendix, No. VI.

But after this disease, we find, occasionally, an abscess in the brain, softening of the brain, induration of the brain, or tumors in and upon it. We also find exostosis, thickening, and effusion;—not that the thickening and effusion have been the cause of the disease; but the irritation which produced the epilepsy, likewise produced effusion and thickening. You may find every disease whatever, that is found in the brain, in persons who have been epileptic; because any organic affection of the part may produce the disease. Dr. Pritchard (to whose work on Nervous Diseases I referred, as being an excellent production) says that he witnessed two dissections, where nothing was seen in the brain. There was a man in St. Thomas's Hospital, who had been there from a boy (having been engaged as surgery-boy); and who used to tumble about. I have heard that he was drunk; but I do not wish to discredit his reputation. He died about two years ago; and his brain was examined; and although he was idiotic as well as epileptic, it was said that nothing whatever was discovered. It appears that Wenzel, a German anatomist, and others, formed a society for the investigation of cases of this disease, so far as it regarded the *post-mortem* appearances; and they say that, in fifteen cases out of twenty, the cerebrum was sound; but the pineal gland was diseased, and also the cerebellum; which was altered in consistence, colour, and size; but I know that I have opened persons who have died of epilepsy, and nothing whatever has been found in the cerebellum, or anywhere else. And, again, one often sees the cerebellum diseased, without epilepsy. I believe the truth is, that any irritation whatever will produce this disease; which is nothing more than a great excitement of those parts of the brain connected with the voluntary muscles. You will find it stated, in Dr. Carter's account of a lunatic-hospital in France, that one of the physicians there, among the number of lunatics under his care, examined about thirty adult persons, who had been labouring under this disease; and he found no disease of the brain, but only of the medulla spinalis. These observations were too limited. If sixty had been examined instead of thirty, I have no doubt that the inference would have been different.

Although this disease so frequently arises from a mere functional affection, or a temporary source of irritation, yet it is an infinitely more permanent disease than St. Vitus's dance, or hysteria; and much more frequently does it arise from organic causes. It arises *less* frequently from structural change than palsy does, but *more* frequently from that source than does either chorea or hysteria. Whatever spot in the whole body is the source of irritation,—whatever spot even of the brain itself, (the cerebrum, or the cerebellum), it is probably the medulla oblongata which is the chief seat of excitement. My reason for arriving at this conclusion is, that pressure on the medulla oblongata always causes sleep. This has been ascertained experimentally in individuals, where no other part of the brain existed than the medulla oblongata;—the cerebrum and the cerebellum having been deficient. It is said that, in the case of

certain fœtuses, if the medulla oblongata be *slightly* compressed, you have convulsions; but if it be *more* compressed, you have sleep; and it is also ascertained, that if a sharp instrument be passed into the brain, there is no sensation felt; but as soon as it reaches the medulla oblongata, or the *origin* of the nerves, (as people sometimes say), you have epilepsy. I think these circumstances make it probable that, whatever the cause of irritation may be, it acts there. However, this is only a probability. It may be the chief seat of chorea, tetanus, and hysteria, as well as of epilepsy.

As to the diagnosis of this disease, we have first to make a diagnosis of it from nothing;—to ascertain whether it is really in existence;—not to distinguish it from other diseases; but to distinguish it from nothing at all. This necessity arises from the fact, that impostors frequently pretend to labour under this complaint; because it looks so frightful, and so much excites the attention of bystanders. In the *feigned* disease, the pupils are not dilated, the nails and the face are not livid, and if the hands be forced open, they are instantly clenched again. In *real* epilepsy, if you force open the hands, they remain so; but if a person be feigning the disease, and you open them, he will close them, to shew that it is real! Some imitate the foaming of the mouth, by putting a little soap under their tongue. Again, in the feigned disease there cannot be such palpitation and rapidity of the pulse, as in the genuine affection. The impostor, by tossing about, may quicken the pulse; but he will not produce that thumping of the heart against the ribs, which you find in the real fit; and in the feigned disease he does not very well bear your putting the edge of your thumb nail under his, so as to make an attempt to tear the cutis from the nail. A very horrid sensation is produced by this method;—perhaps as sharp an agony as the human body can experience. It is borne in real epilepsy; but in the feigned disease it is found very unpleasant; and impostors take the hand away, or strike you. You will observe that, in the feigned disease, they generally take pains to fall down in a comfortable place; they do not fall against the fire or hot bars, or against the edge of a table, and so run the chance of getting a black eye, or lacerating their face. They generally fall down in some convenient place; and, like a cow, lie down steadily and quietly. One other mode of ascertaining the deception, is to propose in the hearing of the person some terrible means; such as the actual cautery. If he hears that, and especially if you bring a red-hot poker, he will get up instantly. Many have been detected by talking of some severe means; for the pulse, in consequence of the emotion, will then become quickened, in spite of their efforts to be tranquil.

You will distinguish epilepsy from hysteria, by there being, in most cases, a complete loss of sense; by there being no globus hystericus; no laughing, crying, sobbing, or shaking, during the convulsions; and no delirium. Occasionally you have hysteria combined with the epilepsy, and you have then globus hystericus; but if it do exist, it is only in a slight degree; and if it exist in no more than a slight

degree, you are justified in considering it a case of hysteria, rather than epilepsy. If there be globus hystericus, you will expect all the other symptoms of hysteria, as well;—laughing, crying, sobbing, and perhaps a copious discharge of very limpid urine. The best mode of making the distinction, is not to depend upon one symptom; but to take a general survey;—to remember that, in epilepsy, there is usually a *complete* loss of sense; and that, in hysteria, there is only an *incomplete* loss of sense; and, above all, that the fits do not come on regularly before convulsions. Patients will become sensible; and then, in the midst of their sensibility, the disease begins again; whereas epilepsy generally goes on in a pretty regular manner.

With respect to the prognosis of the disease, if the cause be evident, and is of a temporary and removeable nature, your prognosis would be favourable; but if you cannot discover a cause for it, but see, at the same time, that the cause is not of a temporary nature, or within your power to remove it, then your prognosis should be unfavourable. If you discover the cause, and find it cannot be removed, still of course your prognosis must be bad. The disease, altogether, is one of the most intractable you can have to treat. It is a disease which, in the large majority of cases, cannot be cured; though, in most cases, you may lessen it.

The first thing to be considered (provided you do not find an exciting cause which it is in your power to remove) is, whether the patient be plethoric or not; or whether there is any inflammation. If there be an inflammatory state within the head, or the patient be plethoric even without inflammation, then certainly blood should be taken away. In the fit itself, I should remark, there is nothing to do but to place the patient's head high;—to put him out of danger, so that he may not knock himself; to loosen his neckerchief, and put a cork or piece of wood into his mouth, to prevent his biting himself. If there be any danger of apoplexy, of course you may bleed; but this is not usually the case. I stated that, in the convulsions of infants, cold affusion had been found to do good; and I do not know that it would do harm. Some persons say they have recovered patients from these fits, by putting salt into the mouth. I know that you may frequently recover hysterical women by this means. I have seen them shake their heads, splutter, and open their mouths; but epilepsy is not so soon got rid of. Still, however, it may do some good.

If there be aura epileptica, then you may frequently stop the disease by putting a ligature between the part from whence it arises, and the centre of the body. In a case of this nature, to which I have already alluded, where there were two auræ, a ligature was placed on each side; and when the patient complained of the sensation, some one tightened them. At last the fits ceased so long, that he went out of the hospital; but I heard, after a still further lapse of time, that they had returned.

To speak, however, of the treatment at large, and not of the particular fit. If the exciting cause be evident, you must remove

it, if possible. If it be ascertained that there are worms, you cannot tell whether they are the exciting cause; but it is right to remove them. If there be a stone in the bladder, the operation of lithotomy should be performed. There was a case (rather a celebrated one, I believe) of a man, many years ago, who had received an injury of the head, and in whom epilepsy ensued. A surgeon, at St. Thomas's Hospital, imagined that the removal of the piece of bone, might cure the disease;—that a spicula of bone was most probably proceeding from the inner table. A circular piece of bone was removed, by means of the trephine; and there, luckily, was the spicula; and he never had a fit afterwards. The spicula is preserved in the museum at St. Thomas's. I should imagine you may find a large number of people epileptic, who have received an injury of the head; but you might knock again with the trephine, many times, without such a lucky hit. Mr. Wardrop cured a case of epilepsy, beginning with aura in one finger, by amputating the small joint of the finger. Of course, if any other organ than the brain or spinal marrow, be diseased, we should remove it if possible.

The disease frequently arises from mental causes; and there physic can be of no use. We must administer to the state of mind, if it be in our power to do so. The disease once pervaded a whole school, in Holland, in consequence of imitation. One of the boys had epilepsy; and the whole school became epileptic. It was cured there by making an impression on the mind. The boys were all arranged round the room; and were told that the first boy who fell in a fit, should be flogged. This put a stop to the disease. I have no doubt that, many times, we might cure *ague* in the same way.

If the disease have appeared on the cessation of another, we should, if possible, re-excite the original disease. If it occurred after gout and rheumatism, we should apply strong mustard poultices to the joints; but, besides that, we should endeavour to lessen an inflammatory state in the head; notwithstanding we are endeavouring to re-excite the disease at a distance. Supposing there is no exciting cause to be found, then you may almost always do good, by adopting antiphlogistic treatment. In the first place, in general, you find it useful to insist upon complete abstinence from distilled and fermented liquors;—wine, spirits, and beer of all kinds; and gradually from meat. Persons cannot bear an abstinence from meat well, at first. If any one make the experiment to abstain from it *all at once*, he will find himself grow weak; but if he abstain from it *gradually*, no inconvenience is felt; and a great number of persons can live very well without it. You should also persevere in keeping an open state of the bowels. There should not only be one motion a day, but two. The head should be kept constantly cold, by the use of a shower-bath, and frequent washing of the head. In addition to all this, if the patient be plethoric, venesection, bleeding, and leeches, will be found very useful. Of course, the degree in which all this is done, must be varied in different people; and some

persons are too weak to admit of any thing of the kind; but if their state of body will admit of some part of this antiphlogistic treatment, and more especially if it will admit of a great deal, you will find great alleviation. I know that most persons who come to St. Thomas's Hospital, are *relieved*; but I believe none are *cured*; and I have little doubt that the benefit they derive there, is simply from antiphlogistic treatment. Many are better, before there is time for medicine to have any effect; because they are instantly put on milk-diet, or gruel, or slops. It is, however, to be remembered, that this is not to be borne in every case;—that there may be debility; and that a patient may be made worse by a plan of this kind; and even where a plan of this kind is proper, you may make the patient worse by carrying it too far. I have seen many cases, where patients were better to a certain point; and beyond that, by lowering them, they became worse; and then, by going back to that point, they were better again. But it is necessary, even if patients be weak, if you cannot push antiphlogistic regimen to any extent, still to avoid stimulants, and those things which cause a flow of blood to the head, and great excitement of that organ.

I need not say that setons, issues, and moxæ, are sometimes useful; but occasionally I have found them useless. The application of tartar-emetic ointment at the back of the head and scalp, is a very severe mode of treatment; and I have not found much benefit from it; but by antiphlogistic treatment, and keeping the bowels open, I have almost always seen great benefit produced. There can be no harm in trying mercury and iodine; because there may be some organic disease in the head, which these will remove. There may be irritation; there may be mere chronic inflammation; there may be something to be absorbed; and mercury may do good in such cases. Iodine may likewise do good, as a part of the treatment; but I should not advise you to try it very far. As a part, I may say, of antiphlogistic regimen, mercury and iodine are serviceable. They act by causing absorption; but I am not aware that they do good, except in removing the effects of chronic inflammation. But besides all these things, which may be deemed *rational* treatment, there are certain *specific* remedies in this disease, which we employ *empirically*; —that is to say, remedies which are found to do good without our knowing why. They will not cure the disease, once in many times; but when they do act beneficially, we know not their mode of operation.

The nitrate of silver is one of these; and no doubt it has done great good. You may begin with the eighth, or the sixth of a grain for a child; but to an adult you may give a quarter, or half of a grain, and increase it to six or seven grains. I think Dr. Fowler says (in a case published in the "Transactions of the College of Physicians") that he once gave fourteen grains, every six hours. I know that when you get to a few grains, it frequently purges too much; so that you cannot push it farther. It is a remedy which has a tendency to excite gastritis. The salt, or muriatic acid, that may be in

the stomach, is decomposed by it; and that is the reason why some people bear a great deal. It has a tendency to act on the mucous membrane of the stomach; and therefore, when you are exhibiting it, you should press on the stomach, to see if there be tenderness. There is no rule for the dose; some will have unpleasant effects from one or two grains, and some will bear five or six with impunity. But, besides these immediate effects, there is another, of a chronic nature. It has a tendency, if it be given for a length of time, to make the skin blue. If it be given in minute doses, I believe, for so short a time as three months, there is a chance of the skin being blue. The decomposed salt is deposited on the surface of the cutis; more and more decomposition takes place; and the cutis becomes black, at last;—as though you had taken a lead pencil, and rubbed it on the surface. You will see some persons almost as dark as mulberries; and you will fancy that they were going to fall down, from congestion of the head; but they are merely stained by this medicine. It will cause the sclerotica to be blue; but not to the same intensity as the cutis. I have frequently seen the sclerotica nearly of the colour of the things call *preservers*, which some people wear to preserve their eyes. The nitrate will also blacken the tongue or fauces. It is to be remembered that a large dose is not required, in order to induce this effect; but that a small dose, if it be continued for some time, will lead to the same unpleasant results. It does not so much depend on the *quantity*, as on the *time* that the medicine is given; and, on this account, I think you should be cautious of giving it, in private practice, longer than a month; and, as I do not think a month sufficient to produce any beneficial effects, I seldom use it. If it be not given for a long time, you will not do good; and if it be given for a long time, you run the chance of blackening the patient. In the case of young ladies, it should never be given.

The preparations of copper (Cuprum Ammoniatum,* and sulphate of copper) I think still more useful than the nitrate of silver;—little use as any of them are. I have seen benefit result from them. Respecting the dose of these, it is best to give the fraction of a grain; and to increase it gradually. In cases where a large quantity is borne, you will find it exceed one, two, or three grains a day; and very frequently by no means so much. An over-dose occasions sickness and gastrodynia. Iron has been proposed in this disease; but I cannot say that I ever saw it do good. I have no doubt, when a person has been lowered improperly, that it will do a certain amount of good as a tonic; but as to a specific power in the disease, I believe it has none. I had a patient under my care, who had been bled and starved; who had had issues, setons, moxæ, and every thing else that could be imagined. He went through the operation of a large number of things; and was much debilitated. He then went to some gentleman who gave him iron; and he told me that it cured

* Now called *Cupri Ammonio-Sulphas.*

him. I have no doubt that he hed been reduced too low; and that iron did him good as a tonic; but, six months afterwards, he applied to me again, as bad as ever.

As to lead, you will find that Dr. Rush, of America, states that the acetate of lead has very great power over the disease. It is a fact that, in large quantities, it will sometimes *cause* the disease. Where persons have been poisoned by lead, from taking a large quantity into the stomach, or have been much exposed to its exhalations, epilepsy has been produced. Of course that is no argument against its moderate use; but I cannot say that I ever saw any good arise from it. The sulphate of zinc has been much praised, as well as the oxide. I have given it in St. Vitus's dance. You may exhibit it in large quantities;—sometimes twenty or twenty-four grains; but I never saw it do good in epilepsy. The oxide of tin has been much praised; and so has arsenic; but I have seen persons, from taking the latter, *become* epileptic. I do not believe these things are to be depended upon. Narcotics have been praised;—especially stramonium; but I am not aware that they deserve any great recommendation.

Cold affusion is certainly of use as a tonic; because it does not *excite* the patient. There are many tonics which excite the patient, at the same time that they increase his strength; but cold affusion does not. A cold shower-bath is useful in the disease; for it strengthens the constitution, without excitement; and it may knock down excitement by its antiphlogistic effects. When you employ these remedies, you brace the body, and do not excite it. The oil of turpentine is occasionally useful; but far less so than in hysteria. In hysteria, it is an excellent remedy; but if there be worms, in epilepsy, you cannot use a better medicine than oil of turpentine. Dr. Pritchard thinks, that if the intestinal canal be diseased, it may do good. In amenorrhœa it may be serviceable; not by exciting the menses, but by removing the state which induces the affection; and so in the case of worms. If it remove intestinal affection, then we cannot say that it is good in epilepsy in general; but it removes the cause in those particular cases. Some contend that it is useful in epilepsy combined with insanity. I believe it has a particular effect on the nervous system; and where it has been said to be beneficial in epilepsy, I should suppose it was where there was some other disease. It has been given in two ways;—in small and repeated doses; and in large and less repeated doses. Twenty drops have been given, two or three times a day; or an ounce every two or three days. Some have given a drachm, once or twice a day; but I do not think that, in general, much good is to be expected from it.

Now all these things may fail, entirely through our not attending to antiphlogistic regimen. It is possible that cases happen, now and then, that would yield to some of these remedies; but we neglect to lower the patient. I am quite sure that remedies are frequently prevented from doing good, because we do not remove a plethoric state of the system. In some local inflammations, and in many

cases of various diseases, it is necessary to lower the system to a certain point; and then remedies, which would not otherwise be useful, become so. The reason that the disease is so generally intractable,—the reason that so many remedies are so uncertain, and so unsatisfactory,—is very evident. This is a disease which arises from every sort of irritation, in every part of the body; and the irritation may be *structural*,—may be slow inflammation, or something we cannot remove. If it always arose from one cause, it would be a different thing; but it will arise from any cause whatever;—physical or mental, organic or inorganic; and situated in any part of the body. You will see, therefore, not only that it must be usually an incurable disease, but that there can be no one remedy for it. As to any one remedy being a remedy for epilepsy, I should think a little reflection would shew that it is quite impossible.

HYSTERIA.

In this disease there are fits of general convulsions and insensibility, like epilepsy; but not a continuance of the insensibility after the convulsions are over. For the most part, the convulsions are renewed in the midst of the insensibility. There are also sobbing, crying, laughing, and shrieking in the fit; but particularly before and after it. Sometimes, though not always, there is a mixture of sobbing, crying, laughing, and shrieking, in the midst of the convulsions. You will generally find that the insensibility is incomplete; that the patient has some knowledge of what is going on around; if not all the time, yet during more or less of it. There is also experienced a sense of choaking; as if there were a ball in the throat, which could neither be got down nor brought up; together with irregular breathing; so that you observe them panting, and the breasts heaving up and down. Frequently you have hiccup. Sometimes there is a rumbling noise in the abdomen; and a sensation is experienced as if a ball were rolling to and fro; till at last it comes to the epigastrium, and from thence rises to the throat, where it sticks; and then the convulsions begin, and down goes the patient. The abdomen seems to swell; and no doubt it does so. In a few minutes, sometimes, a woman will be filled with wind. There is frequently also a great secretion of limpid urine; and this, unfortunately, is sometimes discharged. There is also violent palpitation; just as in epilepsy.

These fits will come and go in rapid succession. There is not merely one systematic fit, and then all is over; but there is a succession of these fits; and (as I have frequently observed with regard to nervous diseases) one side is often more convulsed than the other. Occasionally you find extreme tenderness, not during the fit simply, but during the time that women are subject to these fits; and it extends over the whole of the surface. If you press ever so lightly on the chest and abdomen, you find them complain; and the same is felt more or less in the extremities; but it is particularly the case with the trunk; and this has often been mistaken, and no doubt still

is, for inflammation. Occasionally there are other symptoms than these;—there is delirium. Patients, when they are seized with hysteria, are sometimes violently delirious; so that a stranger would imagine there was phrenitis, which required active treatment; but you observe that it comes on suddenly, and that there are other hysterical symptoms. You may generally satisfy yourselves that it is merely hysterical. Sometimes patients have locked jaw;—the mouth being closed; and sometimes they have other tetanic symptoms; but that is the general one. Sometimes, from the violent affection of the voluntary muscles, they have a sensation of extreme pain fixed in some part, called *clavus hystericus*;—a sensation as if a nail were driven in; and I have no doubt that it is the same as the generally diffused morbid sensibility of the surface; only that, instead of being diffused, it is collected in one spot, and is therefore more acute than when diffused. Sometimes there is catalepsy, of which I shall presently speak. There are all kinds of movements of the body, and all kinds of noises made. Sometimes they will bark like dogs, or imitate various animals. Hysterical women make most extraordinary noises.

This is a disease which occurs much more frequently in females, than males; and in females particularly during their sexual period, if I may so call it; that is to say, during the thirty years in which they are in their prime;—in which they have the chief character of their sex; namely, in this country, from about fifteen to forty-five. It must vary in different countries; but in England women menstruate from fifteen to forty-five. If the disease appear at other periods, it is more frequently earlier than later. You more frequently see hysteria in girls who have not menstruated, than in old women who have done menstruating. But, although this is a disease usually seen in females, it is certainly not altogether confined to them; for it will sometimes be observed in boys, and in men under very violent emotions. You will recollect the passage in "King Lear:"—

> "O how this mother swells up towards my heart!
> *Hysterica passio*, down thou climbing sorrow!
> Thy element 's below."

Any woman may have hysteria, if she can but have emotion of mind strong enough. Epilepsy is a disease which only occurs in certain individuals, as it would appear, from a certain degree of predisposition; but any mental emotion will cause more or less hysteria in almost any woman. Anger or grief, especially grief from ungratified desire, or (to use a more elegant expression) "disappointed love," is the most common cause. I presume it is quite as frequent from disappointed *lust*, in which desire is the only ingredient, as from pure, simple, unrequited *love*.

It occurs particularly during the uterine period of life,—during these thirty years,—on several accounts. First, because derangements of the uterus are a very common source of the disease; and

of course the uterus is not deranged particularly, except at that period during which it performs its functions. Women do not suffer much in the uterus, till it performs its functions; and very little after those functions have ceased, except in cases of organic disease. It is during the period of its activity that it suffers particular derangement; and, therefore, during that period, it will suffer particular sensations. Secondly, it is during the period of menstruation, that women fall in love, and have their attachments strongest. Sorrows of all sorts, whether real or imaginary, take place with the greatest severity during that particular period. Thirdly, it is during that period of life, that all the feelings of women are most active. A woman's character becomes altogether developed, when she begins to menstruate; and after the period of menstruation has ceased, all her feelings become more or less obtuse. All our feelings dry up in the decline of life, and we are less susceptible of all emotion. I should suppose there is scarcely a woman who has not had hysteria in some slight degree; such as a choaking in the throat; but it is generally a temporary disease, and by no means dangerous. Sometimes it is dangerous, but very rarely so; and, for the most part, it is only temporary. Epilepsy is so obstinate a disease, as to be an *opprobrium medicorum*; but hysteria generally ceases at last, although it may continue for a long time. When we consider that a slight cause is sufficient to produce hysteria in women, we shall see that it must be a temporary affection, and cannot be dangerous. Emotion of mind, costiveness, plethora of the head, suppression of menstruation, or any thing of that kind, will excite it.

With regard to the treatment during the fit, it should be the same as that for epilepsy. You must set the patient up, and loosen any thing tight about the bosom and neck; and if you find plethora, so that there is a danger of apoplexy, you would of course bleed her. The best thing, however, and one that does not answer so good a purpose in apoplexy, is to souce the patient well. If you get a pail of water, or a large wash-hand basin full, and throw it strongly upon the patients, they are almost sure to come to. The water requires to be thrown with considerable force; and you should not spare it. It is in hysteria that filling the mouth with salt, answers the best purpose. You generally see them come round, if you fill the mouth with salt.

In treating the disease at large, however, we should follow exactly the same rule as in epilepsy. We must, in the first place, look out for any exciting cause; and if we can find it, remove it if possible. In the next place, we must adopt antiphlogistic treatment, provided there be signs of congestion of the head. Many cases of hysteria are cured rapidly by bleeding and purging. There is so continually mere fulness of the head in this disease, and so continually does costiveness produce it, that bleeding and purging very speedily, in general, get rid of the disease, or mitigate it considerably. Women, you know, are much more subject to costiveness, than men. They are not so particular in these matters as men; and their pelvis being

large, it will hold a great deal; and therefore you continually have women tell you, that they have not had a motion for a week. At charitable institutions, particularly dispensaries, where patients attend in great numbers, we find costiveness occurs far more frequently among women than men; and the hysteria will cease by unloading the bowels.

It is necessary, in the treatment of this disease, always to inquire into the state of the womb. It was supposed, formerly, always to arise from the condition of the womb; and the name of the disease (*hysteria*) comes from *υστερα, the womb.* Hippocrates says that it occurs only in females; and the idea of its dependence on the womb, is shewn by the name which common people give it;—" the fits of the mother." The swelling of the abdomen, and the rumbling noise ascending the throat, was thought to be occasioned by the rising of the womb; and therefore attacks of hysteria were formerly called " fits of the mother." The doctors formerly endeavoured to get rid of the fit, by attracting the womb, and by driving it downwards. They put assafœtida, garlic, and all sorts of disagreeable things into the mouth, to warn the womb to descend out of the way; and put " roses and posies" below to coax it downwards. This was the practice formerly, from the idea that the affection arose in consequence of the ascending of the womb.

Although the disease frequently *does* arise from the state of the womb, yet very frequently it does not; and therefore, in all cases, we should examine into the state of the womb. If we find amenorrhœa, we should endeavour to remove it by cupping the loins; and when we have done that, provided the state of the patient will allow it, we should stimulate the womb by oil of turpentine, and injections of ammonia thrown into the vagina; and, if possible, we should recommend marriage; which is by far the most effectual mode of curing amenorrhœa, in many ladies. But I believe that where it does arise from something connected with sexual desire, the cause is for the most part situated in the head. It is astonishing how many young women, with good full bodies, have pain of the head and cerebellum. You have only to ask the question, and you find that the pain is situated there; and I know that if you cup that part well, and purge thoroughly, you may frequently get rid of a number of cases of hysteria, without attending to the womb. It does frequently arise from the state of the womb; but this is only one cause among a number of others.

It has been said that the disease can never occur in men, because it is hysteria; but you might as well say that the " Edinburgh Medical and Surgical Journal" is not a *journal*, because it is not published *every day.* You must not attend to the etymology of a word, but to the meaning. A journal is a periodical, whether it be published once a quarter, once a week, or daily; and so it is with regard to hysteria. The name was given to the disease from its having been supposed to arise from the womb; but the collection of symptoms called *hysteria* will sometimes occur in males;—in boys and young

men whose constitution approaches to that of females, and who are susceptible of violent mental emotion.

Besides removing any exciting cause you can discover, and removing a plethoric state of the whole body by bleeding, low diet, and purging, you will find it necessary, in other cases, to do just the reverse;—precisely as I mentioned in epilepsy. These, however, form only a very small number of cases. You may find it necessary to give tonics (and I think iron is the best), together with cold affusion and cold bathing. I think the cold bath answers better than anything else. Occupation is essentially necessary; and, if possible, a good regulation of the mind. For certain symptoms various remedies are useful. For faintness and choaking, you will find the fœtid gums (although they have been given on a strange hypothesis) very useful. Assafœtida by the mouth and anus are very proper. Camphor and musk are more or less serviceable for the wind following the spasms. Stimulants of various descriptions are often required. For the extreme languor the patient feels, and the extreme sinking of which she complains at the epigastrium,—you find stimulants absolutely proper; particularly that preparation of iron called Ferrum Ammoniatum.* Some patients complain of experiencing a sensation as if they had no inside. All the tonic medicines that I recommended in epilepsy, are useful; and they will frequently cure the disease. I am sure that the best way of treating hysteria, is to remove any exciting cause that may exist; to get the womb into good order; to prevent all fulness; and if there be debility, to remove it. Let the patient be in the open air, and occupied; attend to regular exercise; and use the shower-bath frequently.

I should suppose there can be no doubt that regular hysteria is situated in the head. The cause may be anywhere; but the disease must be in the head. If you see a patient partially convulsed, it may arise from an affection of the spinal marrow; but in hysteria, muscles are affected that arise *above* the spinal marrow; in addition to which there is insensibility; which, I should suppose, shows that the seat is in the head. You see patients laughing, sobbing, and crying; and then they are in high spirits again, all at once; so that it certainly must be an affection of the head. I suppose it must be an affection of the brain, just as is the case in epilepsy; only that it arises from a variety of causes, situated in a variety of parts.

The treatment of this disease is for the most part very successful; because there is scarcely a predisposition required for it; and the slightest exciting cause is sufficient to produce it. This is not an *opprobrium medicorum;* but, on the contrary, medical men gain the greatest credit in treating it. Although it would cease spontaneously, you may expedite the cure. It very rarely arises from an organic affection in the head, as epilepsy does. As to the other affections,—the palpitation, the faintness, and such things,—they only show the extent of the affection; but the chief source of the symptoms,—the

* Now called *Ferri Ammonio-Chloridum.*

particular characteristics of the disease, must, I presume, be situated in the head.

To speak of particular symptoms which sometimes attend it. The trismus, I mentioned, may in general be got the better of, by a good dose of oil of turpentine. You may throw up two or three ounces by the rectum, or give it the patient to swallow; but the latter is not an easy matter. The jaw generally opens, as soon as the turpentine reaches the intestines; and I have never seen it fail in effecting a cure. Sometimes it has instantly removed the affection; but, in other cases, not for a few hours. The disease sometimes produces paralysis. I have seen paralysis of the whole of one side;—hemiphlegia; but it went away. I recollect particularly one case of a young girl, who was seized at church. It is very common for them to be seized at church. I suppose they get excited by the discourse, and by the heat; and sometimes they see persons whom they like very much; but true it is that young ladies are very fond of going into hysterics at church; and they shriek out, disturb the congregation, and put a stop to the service for a time. Now this young woman did so; but there was no pretence in it; and afterwards she was in a complete state of hemiphlegia. By dosing her well with oil of turpentine, and bleeding her copiously, she got completely well very speedily. I have seen several of these cases; and they have all done very well. The paralysis is not of a permanent nature, but depends on a temporary state; and by free bleeding and purging, and especially by the exhibition of oil of turpentine, I have seen it go away. I do not know a better remedy for a great number of cases of hysteria, than this; and to illustrate the use of it in cases of this sort, I may mention that I remember the case of a kitchen-maid, who was seized with violent convulsions (supposed to be hysterical) and comparative insensibility. She had continued in that state all the day in which she was seized, all the night, and all the following morning. I took thirty ounces of blood from her, and purged her with salts and senna; but she still remained insensible; and I then had her brought to the hospital. I ordered two ounces of the oil of turpentine; and in half an hour she was perfectly well. It had no purgative effect whatever; but after being insensible for two days and one night, notwithstanding she had been freely bled and purged, a full dose of oil of turpentine restored her completely. The symptoms of insensibility, of trismus, and of paralysis, will give way to this, much better than to any thing else; but it is right to bleed, in many cases, in consequence of the state of the head. The turpentine took no purgative effect, till a dose of castor oil was given; and then it went to work directly. After this she had an attack of paraphlegia; but from that she perfectly recovered. I believe, therefore, that in trismus, in hemiphlegia, in delirium, and in continual stupor, provided you have a proper recourse to bleeding and purging, the best remedy is oil of turpentine. In common hysteria it is one of the best things you can employ. In the same class of medicines are the fœtid gums; and wherever you think proper to employ them,

you may employ the oil of turpentine to the same advantage. It has the property of a strong purgative; though it requires to be set off by something else. You may give one ounce first, to see if that will do; and then follow it up by castor oil.

You frequently see nervous women in a state of what they call *the fidgets*. They cannot sit still a minute; and the state is exceedingly distressing. You sometimes see this removed by the warm bath; but it is best combatted by mild narcotics. Sometimes I have given opium; and, now and then, I have known prussic acid tranquillize them, when nothing else would; but, in other cases, you will find other things do good. You find the shower-bath, if you can get them to use it, of great service. Besides this state of morbid irritability of mind and body, they are very perverse, and get great discredit by their bad temper; but I am satisfied it is a morbid state. They are very sulky. I have known them correct the medical attendant, scold, and even swear, and do all sorts of malicious things;—pretending to be worse than they are. I have seen this so frequently, that I have no doubt whatever it is all a morbid state of mind. Some of these attacks will come on periodically, particularly at the menstrual period; and when they fall into this extraordinary state, it can only be treated on the same general principles as common hysteria;—removing fulness if there be any, and getting them to use the shower-bath.

You will find the pain of which I spoke,—the morbid sensibility, a very remarkable circumstance; and you may frequently be deceived by it. I confess, I knew nothing about it for many years. Females, with some slight hysterical symptoms, will say they are so tender, that they cannot bear pressure; and such appears to be the fact. The least pressure gives them agony. If you press the integuments, or if you rub them, you find them instinctively turn away;—shewing that it is situated in the skin. Sometimes it extends over the whole body, even to the extremities; and sometimes it is confined to the abdomen. I am quite satisfied that there is no pretence in all this. I saw one young woman who had been in bed three months in this state. She had been blistered, and leeched; but without any benefit whatever. I saw one young lady, about nineteen, who was lying in bed in this condition. The uterus, I understand, was disturbed; so that she menstruated scantily; and there was fluor albus. Her bowels were constantly costive, so as to require medicine. There was constant pain of the head, and much tenderness of the abdomen; so that any one would, without care, have thought it was inflammatory. She could not bear the least pressure; and yet there could be no inflammation; for the pulse was only 58, and the tongue clean; and although there was much pain in the head and eyes, there was no drowsiness, and no intolerance of light. I had no hesitation in considering it a variety of hysteria. About two years ago I had in the hospital a woman, forty years of age; who, when I touched her, cried out as if I had been going to murder her.

I have treated these cases on the same principle as neuralgia;—supposing them to be an affection of the nerves; namely, with iron; and they have all done well. I have not found it so in that particular state called *clavus hystericus*, where the pain is all felt in one spot; but where the pain is diffused, it is one of the best medicines that can be employed. As to hysteria at large, I do not believe that iron has any power over it. It is only in those cases where there is debility, that it is of use; and then, I presume, it is not serviceable from any specific power over the disease; but as being the best tonic we have.

CATALEPSY.

There is a disease which is spoken of separately; but which, I cannot help thinking, is merely a variety of hysteria;—it is called *catalepsy* (from *καταλαμβανω, to seize*).

In this form of the affection, the voluntary muscles will take on any state that you think proper to give them; and so they will remain. You may mould the body into any form you choose. If you take an arm, it is so limp that you may mould it in the same way as a joint of meat. Consciousness and perception are sometimes entirely destroyed; and sometimes only partially so. Frequently the person is not aware of her existence, or of what is going on around;—consciousness and perception being both absent. Dr. Gregory used to speak of the case of a lady, who had undergone great mental anguish. Her history, he said, was like that of Isabella, in the tragedy of the "Fatal Marriage;" and she was seized with catalepsy. When she appeared unconscious, if her child were presented to her, she gave signs of knowing it; but that was the only proof she exhibited of the least consciousness.

It is a disease which occurs more frequently in women than men;—just as hysteria does; but, like hysteria, it sometimes occurs in males. There is a case mentioned by Bonet, of a deserter who was captured, and when taken shrieked violently; and who then entirely lost his voice from the violent mental emotion. He was a man of no great courage. He became immoveable and unconscious, and then fell into catalepsy; so that you could mould him into any thing. This man neither ate nor drank, nor did he discharge his fæces or urine for twenty days; at the end of which time he sunk. Occasionally the affection has been periodical. Dr. Heberden mentions, in his Commentaries, that he once saw a case at St. Thomas's Hospital, which he visited from curiosity. The woman was thirty-six years of age; and had a paroxysm of catalepsy morning and evening. It usually continued from one to three hours; but on one occasion it lasted *twelve* hours. The fits came on without any warning; and during them, he says, the pulse and the breathing were natural; the eye was fixed, as if she were looking attentively on some object; the arm continued as it was placed, for twenty minutes together, and once for a whole hour; and he was told that it would sustain a weight of seven pounds, in any posture in which it was placed. The jaws were closed; but if the nostrils were closed, then the mouth opened for

the purpose of breathing. A slight winking was noticed, on approaching the finger to the eye;—a little contraction of the iris. There was a case in the hospital a few months ago; but it was not under my care. It came on in paroxysms at one certain period; but I did not see the case. It occurred as hysteria so often does, in a girl. The symptoms of the disease are not always regular. It is sometimes impossible to mould patients. They are perfectly rigid; and you can lay them out like corpses.

This is a disease not necessarily dangerous, any more than hysteria; but it appears now and then to have proved fatal; or, at least, that state of the system in which it has occurred, has proved fatal. You will find such a case mentioned by Dr. Gooch; and it has been published in the "Transactions of the College of Physicians."

It is necessary in this disease, just as in hysteria and epilepsy, to ascertain whether the case is real. We are told that John Hunter discovered that a case of this disease was feigned, by putting a string round the wrist of a patient, after the arm was extended, and appending a weight to it. The string was suddenly cut; and, as the man had then no weight to support, the arm was immediately raised. It appeared to John Hunter, that the man had sustained the weight by the exertion of his muscles; and the string being cut, he instantly threw up his hand. Another device has been, to throw a person labouring under the disease into a cistern of cold water. If the disease be genuine, it is supposed that the patient will go to the bottom; but that if not, they will make an effort not to be drowned, and will struggle about. I should not, however, consider this any proof; because nothing is so good in hysteria, as throwing a woman into cold water. You therefore see that, in catalepsy, plunging the party in cold water, is likely to stop the paroxysm; and, if the paroxysm be stopped, then the person may struggle about, and yet not be an impostor.

It is said, however, that a very ingenious mode of discovering whether the disease was feigned or not, was put in practice by a physician (or at least by a *practitioner*) in the East. Pocock, in his travels, mentions, that a case of this disease occurred in one of the favourites of a celebrated caliph; or, at least, that one of his favourite damsels pretended she was in this condition. Pocock says there was general sorrow throughout the palace; the women all sobbed; the eunuchs all groaned; and the Dey was distracted. He sent for all the royal physicians, ordinary and extraordinary. They used stimulants and warm fomentations to soften the limb, but all in vain; when a man, who had cured the grand vizier (the prime minister) of some secret disease, was recommended to the Dey. This man was named Gabriel; and he obtained a promise, that no offence should be taken at whatever plan he adopted to cure the lady. Being thus himself secure, the lady was brought into the presence of the court, with all the women around her, and covered with a fine muslin robe, flowing down to her feet. Gabriel ran up to the lady boldly; seized the hem of her garment; and endeavoured to raise it

up, so as to expose her person. The lady modestly put down her hand to prevent the insult; when he immediately turned round to the caliph, and said, "O, defender of the faithful, so and so is cured." Here was a case of complete deception, from the beginning to the end; and the poor man devised this ingenious means for detecting the cheat.

With regard to the treatment of the disease when it is real, I believe the best mode is to adopt exactly the same plan as in hysteria. In the paroxysm you should dash cold water on the patient; and give her oil of turpentine, either by the mouth or the rectum. You should purge the patient well; and, if possible, remove any source of irritation that may be present. There are cases which, I have no doubt, will be best remedied by antiphlogistic measures, and the removal of plethora. On the other hand, there are cases which will be best treated by tonics. The general principles will be the same as in hysteria. I have never had to treat a case; but from what I have seen in other instances bordering upon it, I have no doubt that the same treatment would answer very well.

TRANCE.

One of the curious forms of hysteria is long-continued insensibility, which is called a *trance*. Sometimes there is continued insensibility for a few days or weeks; and sometimes for many weeks. Sometimes they will eat, if food be put into their mouths; and sometimes not. Sometimes they will wake for a few hours, or do certain things, shew some power over volition, and then fall into the same state again. Some will open their eyes, and then fall asleep again. Some, in this state, are perfectly conscious of what is going on around them; but cannot make the least effort. There is an instance mentioned of a female (for these strange things generally occur in females) who was presumed to be dead. Her pulse could not be felt, and she was put into a coffin; and as the coffin lid was being closed, they observed a sweat break out, and thus saw that she was alive. Of course she was not interred; and ultimately she perfectly recovered; and then stated, that she had been unable to give any signs of life whatever; that she was conscious of all that was going on around her; that she heard every thing; and that when she found the coffin lid about to be put on, the agony was dreadful beyond all description; so that it produced the sweat seen by the attendants. I have seen a case of this extraordinary insensibility;—*trance*, as it is called; where the patient continued for two or three weeks (with the exception of short intervals) in a state of insensibility; though not without signs of life; for the heart was still beating; and sometimes she did, in this state, certain voluntary things, and would afterwards be conscious of having done so. Sometimes she would be unable to do any thing, and yet retain her consciousness, so as to mention it afterwards.

Hysteria, in these irregular forms, although for the most part a disease without danger, may become fatal. I never saw a patient

die of the disease till last year; and I then saw one young lady die after regular hysteria, and another die after a trance. In fact, two sisters were affected in the same way; one of whom died before I saw her; and I went to see the other. Although she was well supported every hour, as she lay apparently a corpse; yet I believe she sank at last. The other was a case of regular hysteria; and I concluded the patient would do well under ordinary treatment; but all at once she sank. Swelling of the hands came on, the pulse became weak, and she died; but *why*, I cannot tell; for I could not obtain leave to open the body.

It is a curious circumstance, but you will find it mentioned by Mr. Brodie, that hysterical women sometimes, when the hysterics are over, have an affection of the joints;—evanescent stiffness of the joints, with heat and pain.* In the young woman seized at church with hysteria, which ended in hemiplegia after she got rid of hysterics, one knee was stiff, although applications were resorted to for a month. Mr. Brodie, in one of his lectures published in the "Medical Gazette," mentions the occurrence in the wrist; but, in my practice, I have seen it in various parts of the body. It is usually an evanescent state; but still it is sufficient to prevent the patient from using the parts.

LETHARGY.

We now proceed to consider those diseases of the nervous system, which are marked by no excitement; but by a simple deficiency either of sensibility or motion. The first of which I will speak, consists of a deficiency of sense and motion together;—a disease marked by profound sleep. You will find it mentioned in the "Philosophical transactions" for 1694, that a man, twenty-five years old, who resided near Bath, slept nearly a month in a state of lethargy. In two years, he again fell into an inordinate sleep. At first, he ate, drank, and discharged his urine and fæces; but at length his jaws set; and he ate nothing more, and did not awake for seventeen weeks. It so happened that the barley was being sowed when he fell asleep, and when he awoke it was being reaped. In August he fell asleep again; and was bled, stimulated, and treated *secundem artem;* but did not wake till November. The termination of the case is not given.

You will find it mentioned, in Plott's "Natural History of Staffordshire," that a woman slept forty days. In the "Medical Observations and Inquiries," there is an account of a woman who slept seventeen or eighteen hours, every day, for fifteen years. Dr. Good mentions seeing a lady, who was only in the habit of waking for one or two hours, two or three times a week, during the summer. I believe an affection of this description is not dangerous. I have heard (but I do not know the particulars of the case) that there has lately been an extraordinary person of this description, who was in

* This eminent surgeon (now *Sir Benjamin* Brodie) has recently published some lectures specially devoted to hysterical diseases. See his "Lectures illustrative of certain Local Nervous Affections."

the habit of sleeping for weeks together. The only cases of the kind that I have seen, have been trances;—those affections of an hysterical nature, which I formerly mentioned.

Although this disease is usually not of a dangerous character, Dr. Willan mentions, in his "Reports of the Diseases in London," that lethargy is very common among the Jews of this town; and that it frequently ends in fatal apoplexy. Occasionally, after fever, persons will sleep for a very considerable time. Willis mentions a case of putrid fever, which terminated in a perfect sleep of four days; and, at the end of that time, the man was imbecile for two months. Mr. John Bell, the surgeon, saw a man who, in consequence of a fall, lay a great length of time in a sleep of this description; and when he awoke he was incoherent; but he finally recovered. This is all I know of this kind of sleep.

But we frequently see a very profound sleep, beginning suddenly, and very often ending fatally, leaving palsy behind it. This affection is called *apoplexy;* and we see instances of it every day.

APOPLEXY.

In this intense description of sleep, there is a great diminution (or entire loss) of sense and motion; slow, laborious, and generally stertorous breathing;—a loss, indeed, of all the animal faculties. It is generally sudden; whence its name (from απο, and πλμσσω, *to strike*);—the person being struck down.

If a person be upright, or walking about, or sitting, he falls down; and sometimes dies on the spot. He is dead in an instant, as if he were shot. If, however, death does not take place instantly, you observe the pulse to be generally slow and full; the face is livid and flushed, and also swollen. The lips are particularly livid; and there is generally a little froth (though not to be compared to what is seen in epilepsy) proceeding from the mouth; and a blowing, frequently, from the lips and nostrils. The lips do not act in the same way as they do when we are in moderate sleep, or when we are awake; but the air forces them open, and their elasticity brings them back again; so that the lips are constantly moved, together with the alæ nasi. The pupils are usually dilated, and the eye is insensible and closed. The cornea looks dull and glassy; the eyes are frequently blood-shot, and have a livid tinge; and so has all the rest of the face. There is at last a difficulty of swallowing. In some cases, if the attack be very severe, there is a difficulty, and perhaps an inability of swallowing from the very first; but, at any rate, when the disease terminates fatally, there is an inability to swallow at last.

When the disease does not terminate by instant death, it may last for a few minutes, or for some hours, and even days. Persons have recovered after lying in this insensible state for three days. I believe that when the state is not genuine apoplexy, but a symptom of what is called mere nervous derangement, in hysterical women, it may last any length of time; and persons will then recover; but if it

be genuine apoplexy, persons seldom recover, if the insensible state continue beyond three days.

The disease does not necessarily consist of an *entire* loss of sense and motion; for there is a degree of both in most cases which do not immediately terminate fatally, even continuing till just before death. Respiration is considered, by some, to be a voluntary process altogether. Although it continues during sleep, in the natural state, yet that is no more than any voluntary action. If you tickle a person when asleep, he moves himself directly, to avoid the sensation; and therefore it is no argument that breathing is not voluntary, because it continues during sleep. Almost all voluntary motion may be performed, more or less, if no great effort be required. However, respiration continues, whether you choose to consider it voluntary or not; and the ability of a person to swallow is, of course, another instance of voluntary motion. Persons, however, will frequently do more than this;—if you pinch them, and make them uneasy, they will groan. You find the heat generally increased;—especially of the head; and it is not unusual to see clammy sweats. These almost always occur, however, during the *last* period of the disease.

Although the affection comes on, generally, in this sudden manner, yet it is occasionally preceded, for a length of time, by drowsiness. You see persons fall asleep in company, and at church, (where they will snore away), even months before the fit. It is common for the attack to be preceded by headache; and by a throbbing, and a sense of tension and weight of the head. Many complain, previously, of dimness of sight and double vision, giddiness and vertigo; and you may frequently observe the eyes to be red before a paroxysm. Some have flashes of light (like stars) before their eyes, deafness, and tinnitus; together with dreaming, nightmare, and epistaxis. It is not uncommon for persons, before they become apoplectic, to have numbness of the fingers, or of one finger, or of some part of the body. Sometimes, besides this, there is tingling; in other instances, slight twitches of the muscles; and occasionally stammering. It is very common for impairment of the memory to occur; as well as more or less depression of the spirits. You may very easily conceive that the circumstances which occasion apoplexy will, in a slight degree, cause simple headache, or throbbing of the head, or double vision, or any of the other symptoms which I have mentioned. Stammering, an inability to use the muscles of articulation properly, and a loss of memory, will also arise from a fullness of the head; and from such a state as, in greater intensity, will produce apoplexy. Sometimes, before the attack, persons will have hemiplegia for a longer or shorter time; so that hemiplegia frequently terminates in apoplexy. Independently of these symptoms, the invasion of the disease is sometimes very slow. Instead of persons being knocked down, the disease will come on slowly, whether they have these symptoms or not;—so that, from being sleepy, they at last become apoplectic quite insensibly.

There is another form in which the disease comes on, which it is very important you should know; and that is, where it begins with syncope; from which the patient frequently recovers, for a longer or a shorter time, till he afterwards becomes apoplectic. You will find this particularly mentioned by Dr. Abercrombie, in his very excellent work on Diseases of the Nervous System. Before the attack of apoplexy, there is sudden pain of the head;—a sharp, cutting, severe pain; but instead of the face being flushed, full, swollen, or livid, it is pale. Perhaps there is a little delirium, perhaps a wandering; but a sudden pain occurs in the head; the face is pale; the patient feels cold and faint; and there is also vomiting and purging. After this attack of syncope, the patient gets up, and may walk about; but in a few minutes,—though sometimes not for a few hours, and sometimes not for a few days,—but after this, whatever the interval may be, coma and apoplexy gradually take place; the body then acquires its natural warmth; perhaps is as hot as in common apoplexy; the pulse is no longer faint, but becomes full and slow; and the ordinary state of apoplexy is established.

This form of the disease, I may mention, is almost always fatal; and from this circumstance;—it arises from a rupture in the head. A rupture takes place within the brain;—not producing immediate effusion, in most cases; but sufficient to cause violent pain; and to produce such an influence on the heart, as to impair its action considerably; so that syncope takes place; and then, after this symptomatic syncope, blood gradually oozes from the vessels, in different parts of the brain; till, at last, pressure takes place, and you have common apoplexy. It is particularly necessary to know this form of the disease; or you might give a favourable prognosis. Seeing the patient is very faint, and hearing of the pain of the head, you might thing nothing of it; but you must remember that it may arise from a rupture in some part of the brain; and in a few minutes, hours, or days, effusion will gradually take place; and that to such an amount, as to produce common apoplexy. After the latter disease, there is almost always found rupture and extravasation.

However, when the disease has begun, if it do not destroy life, the symptoms gradually recede, till they disappear altogether. Consciousness, perception, a knowledge of existence, and an observation of the external world, return; and the power of volition is directed to the voluntary muscles. Sometimes, however, there is not a perfect return. Power, consciousness, and perception return, except in one part of the body; so that, after the disease, one half of the body very frequently remains motionless, without being at all subject to the volition of the patient; and sometimes, in addition to this loss of *power* over half the body, there is a loss of *sense* there;—at least in regard to touch. The surface of one half of the body frequently remains insensible. There is a paralysis of *sense*, as well as of *motion*; and this state may gradually subside, or subside only to a certain point, or may never be recovered from; and in that state a person may live for an indefinite time. Frequently, too, after these attacks,

the mental powers are weakened; so that the patients are never the men mentally that they were before;—never have the same power of attention,—the same memory,—the same power of mind altogether, that they had before the disease.

If the affection, however, gradually destroy the patient, the power of sensation and volition does not return; and deglutition is lost. The power of deglutition, and the power of respiration remain, unless the disease kill the patient directly; but if the patient remain insensible, the power over the muscles of deglutition is gradually lost. He swallows worse and worse, till he cannot swallow at all; the pulse becomes weaker and weaker; the body cooler; respiration quicker, and at length irregular; and thus the scene is closed. The heart, however, will beat a few strokes, after you have witnessed the very last inspiration.

You will sometimes see, in an attack of this disease, that the pupil is not dilated; but, on the other hand, extremely contracted; and there is no worse sign in apoplexy than this. I recollect a German friend of mine, who had the largest pupil I ever saw; in fact, the iris appeared to be nothing more than a thread in the form of a circle. I have frequently looked at him with astonishment. The iris never appeared larger than a thread, forming a very fine ring. He took it into his head not to live any longer; and therefore poisoned himself, by taking half an ounce of pulverised opium. I do not know the cause of the act; but some hours after taking the opium, he fell into a state of coma. It is a striking circumstance, that coma did not come on for a considerable time; and as he mentioned to his friends what he had done, they sent for all the doctors they could find, and for me among the rest. He lay upon the bed; and of course we proposed giving him emetics; but he, being as much himself as any one in the room, declared we should not give him any thing. We had sulphate of copper and of zinc in abundance; and endeavoured to put the solution into his mouth, and pour it down his throat; but he so kicked, thumped, and beat us, that it required a dozen of us to master him. He said that, if he thought proper to die, no person had a right to interfere with him. Finding he would not swallow what was reasonable, we got a stomach-pump; and, with great difficulty, we passed it down, and emptied the stomach; and then poured in so many wash-hand basons of water in succession, that at last the water came out as clear as it went in; so that we completely evacuated the stomach;—he, all the while, exclaiming against the barbarity of keeping in this world a man who had no desire to stay in it. After all this, apoplexy came on. He became senseless, his pulse slow, his face swollen, his lips livid, and his eyes suffused, and there was also stertorous breathing. We opened the jugular vein, and a vein in the arm; bled him freely, and dashed pails of cold water on him (which is one of the best things); but it was all of no use. His passion, I presume, had a great deal to do with it; for he was in a violent rage to the last moment. He was sensible; and the pupil was so contracted, as to be reduced to the

size of a pin's point. It would have been difficult to pass through the iris any thing of a larger diameter than a pin. I need scarcely say he died. I believe that when apoplexy has come on from opium, and perhaps from other narcotics, a contraction of the pupil has been observed; but when apoplexy is of the ordinary kind, and has not arisen from narcotics, this symptom is mentioned by authors as being almost always a fatal sign. I never saw a patient recover, in whom the pupil was so contracted; though, of course, I have seen them recover where it was dilated. Whatever danger there may be from other symptoms, you ought, if you see the pupil contracted, to give a guarded prognosis. It is mentioned, by many authors, that this state of the pupil is unfavourable; and, so far as I have made observation myself, I think the statement fully verified.

I may mention, while on this subject, that the state of the pupil, in affections of the head, is very various and very singular. When apoplexy is produced by external mechanical causes, in injuries of the head, notwithstanding the comatose state, the pupils are obedient to light and darkness;—following the introduction or exclusion of the light, just as in health. This has been observed by Mr. Brodie; who has written an interesting paper on it, in the fourteenth volume of the "Medico Chirurgical Transactions." He also mentions having seen *dilatation* of the pupil alternate with *contraction*. At one time, the pupils were extremely dilated; and at another, extremely contracted; and this alternation had been repeated several times. He also mentions (what you might expect) that he has seen dilatation cease, when venesection was practised; and then, when the effect was gone off, the pupils were dilated again. That also you would suppose. When a bone compressing the brain was elevated, the dilatation ceased. Dr. Hennen states, in his "Military Surgery," (which I need not say is an excellent work) that he has seen the pupil *dilated* when light was *admitted*, and *contracted* when it was *removed*; and Mr. Brodie mentions seeing eyes in the opposite states; that while there was a morbid *dilatation* of *one* eye, there was a morbid *contraction* of the *other*; and sometimes he has observed the pupil of *one eye only* to be dilated. These are irregular circumstances; and, as you may meet with on or all of them, it is well you should know them; otherwise you might pay no regard to them when you meet with them.

In the midst of a fit of apoplexy, you will sometimes also see hemiplegia;—in fact, *double* hemiplegia; but you find the hemiplegia existing more on one side than on the other. Although the patient is motionless on *both* sides, you will observe that the muscles of the face will be violently drawn to *one* side; showing that the apoplexy is not equal;—that one side is able to draw the other towards it. Sometimes, in this disease, there are convulsions. I should presume that, in these cases, there was not only compression of the brain, but more or less laceration, or an inflammatory state;—there must be some cause of *excitement*, besides the compression which produced apoplexy;—something injuring one portion of the brain so much,

that there are convulsions. These convulsions are sometimes seen to affect only one half of the body. The blood that you take away from the temporal artery, in this disease, is very often as dark as venous blood; and the blood you take from the veins, is very often buffy, and even cupped. The state is very often one of a decidedly inflammatory nature.

On opening the bodies of patients who have died of this disease, you may perhaps find nothing. I have seen it stated, that a person could not have died of apoplexy; because nothing unusual was found in the head after death. But I have opened many persons who have died of apoplexy, and have found nothing that would have led me to suppose they had been apoplectic. There most probably had been extreme fulness of the vessels during life, and after death the fulness had completely gone off. Sometimes there has been a retraction of the vessels; and sometimes copious blood-letting has been had recourse to; but the brain has been so compressed, that the removal of blood was not sufficient to reinstate the brain in its former powers. However this may be, I have opened many patients who have died of this disease, and found nothing would lead me to suppose they had died in that way. You will indeed frequently find, after this disease, that the great turgescence of all parts of the face, will go off;—if not *entirely*, yet to a *great degree*; and you must suppose, therefore, that the same thing may occur internally. I recollect a patient who died of this disease. He was lying in the dead-house; but the veins looked so full and tempting, that I begged some of them might be opened, and the subject bled freely to a pint; and, although the face was livid and swollen, the lividity went down, and the face recovered it former size. You may therefore presume that a change may take place in the branches of the *internal* carotids, similar to that which occurs in the branches of the *external* carotids.

But, in the second place, you may find great fulness of the vessels. The sinuses are generally filled with blood; and the vessels of the pia-mater are exceedingly distended; so that they present an obvious and decided turgescence. Thirdly, you will sometimes find an effusion of serum *in* or *upon* the brain. Sometimes there is simply this; but sometimes it is united with a general fulness of the vessels. It is said that, if the disease arise after ischuria renalis, serum is generally found; but I recollect opening one patient, in whom neither was there a fulness of the vessels, nor was any serum effused in or upon the brain. I never opened more than one who had died of apoplexy after the suppression of urine.

In the fourth place, we sometimes find extravasation of blood. This may be upon the surface, or in the substance; and, in the latter case, I believe it is found, more frequently than not, near the ventricles. It is seldom seen in the latter alone. If you find blood effused into a ventricle, it generally arises from its having been effused into the substance of the brain near the ventricle, and projecting through the cerebral substance, so as to make its way into

this cavity. The blood may be effused, of course, in any part of the brain;—in the cerebrum, in the cerebellum, and even in the pons varolii, so as to lacerate it; and if it be effused near a ventricle, it frequently makes its way into it. It is in these circumstances, for the most part, that you find blood in the ventricles;—it has made its way from a neighbouring part in the substance of the brain. Andral has made a large number of dissections; and states, as the result, that the blood almost always finds its way to the ventricles by rupture. Of three hundred and eighty-six cerebral hæmorrhages read of by him, he finds that two hundred and two took place in the substance of the hemispheres; sixty-one in in the corpora striata; and thirty-five in the thalami nervorum opticorum; so that the hemispheres are by far most frequently the seat of hæmorrhage.

The new cavities formed by the extravasation of blood, may be of all sizes; varying from the size of a small pea, to that of a walnut; and, indeed, much beyond that. There is great variety, also, in the number of these effusions. Sometimes you will find only one; in other instances you may find two; and in some cases you may find several. The blood which is effused looks, at first, like currant-jelly, with a reddish fluid around it. In about a fortnight, this clot becomes much firmer; and at length it becomes soft, and has merely a reddish fluid around it. It is sometimes completely absorbed; so that a cavity is left; and that is called an *apoplectic cell.* This cavity is sometimes lined by a new serous membrane; sometimes it contains clear fluid; and occasionally it is perfectly empty, and may remain so for a great length of time; and indeed, for what I know, for life. It is said, by some, that a coagulum may remain for a long time in the brain, without much mischief; but, where it does exist, it generally gives rise to paralysis.

If it be absorbed before that process is completed, there are filaments seen sometimes spreading in all directions; and occasionally the filaments contract adhesions. Adhesions are formed, and the part contracts; an appearance of cicatrization takes place; and the spot becomes much firmer than before;—generally it is yellowish, and sometimes darkish. Of course these observations are only made from inspecting a large number of cases. On opening different cases at different times, it is seen, in the first instance, that there is only blood of the consistence of currant-jelly; still later, it is found to be much firmer; and sometimes it is completely absorbed. There may be an empty cyst, or the cyst may contain serous fluid; but sometimes the red particles are absorbed, and the fibrin only is left. This becomes filamentous; and the whole part becomes firmer than it should be.

The best representation that I know of these things is that by Cruveilhier. In one of his plates you will see the progress of the changes. Nature makes an attempt to restore the part;—just as she would in any other situation in the body. Plate viii, Fasciculus x, Figure 1, represents the substance of the brain into which there has been an effusion of blood. Figure 2 represents a cavity in

which a clot had formerly existed; and which, Cruveilhier says, was filled with serous fluid when he opened it. Dr. Baillie's plates are not coloured; and therefore they do not show the affection so well.

When blood has been effused into the substance of the brain, and you examine it soon after the occurrence, of course the appearances are the same as where the blood has been effused anywhere else; but, if the patient survive, this clot of blood may be completely absorbed, so as to leave a cavity; and that cavity may be lined with a serous membrane, and may contain clear serum; or the cavity may remain during the rest of the patient's life. Sometimes the blood, it is said, is not absorbed, but remains where it was effused; and both in that case and where apoplectic cells have been formed, it is asserted that, in some few instances, no symptoms have arisen. You may have an opportunity of examining the process of absorption, by opening a number of cases; and you find, in the first place, that the serum becomes absorbed; that the clot becomes firmer and paler; and then, frequently, a number of filaments are produced, running from the cells of the cavity. These filaments, at first, are lōosely attached; they then become firmer; at length sometimes the cavity will shrink; all the parts will contract, and become hard together, so that a cicatrix is produced; and this cicatrix will become very firm. Sometimes there is no cell left. The blood is entirely absorbed; a cicatrix is produced; the sides of the cavity approach together; the filaments also are contracted, I suppose; and the whole becomes quite firm. In these circumstances, there is generally a change of colour;—sometimes to green, sometimes yellow, and sometimes purplish.

When there is a clot effused in the brain, it is generally found that the substance of the brain around it is softened. Dr. Baillie mentioned, long ago, that if blood be effused into the substance of the brain, the cerebral substance around the clot is very frequently softened;—it is so injured that it becomes soft. Sometimes, however, there can be no doubt that a clot is the result of softening. I am quite satisfied of this from my own observation; for I have seen a person, with a pain in his head, gradually lose his memory, even have a cerebral affection, and then suddenly become apoplectic and die. On examination, I have seen a portion of his brain softened like pap; and in the midst of it an effusion of blood. This is nothing more than what you might suppose likely to be the case. If the cerebral substance of the brain be much softened, the large vessels will at last give way, and let out the blood; so that you may have a softening of the brain, through the presence of blood injecting the surrounding substance; and I feel satisfied you may have a clot of blood through the vessels becoming softened; and then you have more or less apoplexy. It so happened that to-day, at St. Thomas's Hospital, I opened a man who came in with hemiplegia; which is much the same thing in point of pathology. I forget, at this moment, the whole history of the case; but he came in with paralysis of the left side;—the arm, the leg, and the whole of the side, were

paralyzed. In the posterior part of the right thalamus nervi optici, there was found a cavity; the brain was evidently injured; and the part looked just like an ulcer in a mucous membrane. I presume that, in this cavity, blood was effused; it coagulated, and was then partly absorbed. It produced a destruction of the cerebral substance around it; and the blood being partly absorbed, gave rise to the dark colour. I have always seen the injury on the opposite side to that on which the paralysis occurred.

Sometimes, besides congestion and effusion, you will find marks of more or less inflammation. You will see the membranes thicker than they should be;—looking as if chronic inflammation had been going on. In the man just referred to, the arachnoid on the surface of the brain was quite opake; and there was also a considerable effusion of serum; but then he died from an inflammatory attack of the brain. His head suddenly became very hot; he became stupid; and then effusion took place into the substance of the brain, and likewise into the ventricles. This was a subsequent process; and is a very common mode in which paralytic persons die. There is a disposition to disease. In most chronic diseases effusion takes place; and there being no strength of constitution, the patients die. They sink from inflammation within. There is such weakness attending it, that you can do very little for them.

This laceration,—this rupture of the vessels with effusion of blood, very generally takes place from some disease of the vessels themselves. Now and then, the vessels within the head have been found aneurismal. Very frequently, too, they are found more or less ossified. Sometimes they become calcareous;—more or less earthy, and very brittle. It is said that even the veins outside the head, are occasionally found diseased in a similar way. The vessels are so brittle that they will crack; and apoplexy takes place. Now and then, a very large vessel in the head has been found ruptured;—even a large artery. Generally, however, it is the *small* vessels that suffer; but even the sinuses have been found in that state. You will find an instance of the lateral sinus being ruptured, mentioned in the "Journal Universel" for 1820. There is another instance mentioned in the same work, of the lateral sinus being ruptured, in a person intoxicated. In the "Edinburgh Essays and Observations," Volume vi, there is another instance mentioned, where the lateral sinus was ruptured and caused apoplexy. A practitioner informed me, that he was once sent for to a man, who had been carrying a very heavy load; and he found the longitudinal sinus ruptured. We must suppose there was a disposition, general or local, to some sort of disease. Usually, it is the small vessels that give way; and next to them come the arteries. The sinuses are certainly more rarely affected than either. The hæmorrhage, it is said, is sometimes found outside the skull; so that, on removing the skin, the hæmorrhage has been seen there. This is by no means uncommon after external violence; but, when it does not arise from that source, it happens

from a bone being carious, and a vessel of the dura mater thus becoming injured.

It is said that, in cases where apoplexy follows the suppression of urine, a great quantity of fluid has been found in the brain; and even fluid of a urinous character. Whether that is true, I will not take upon me to say; but some people have even found gin in the brain;—at least so it is said. It is stated that an old woman, who had been much addicted to drinking gin, died at the Westminster Hospital. She died with her stomach full of it; and there was a distinct smell of gin in the ventricles of the brain. It is also said, that tincture of assafœtida has found its way to the ventricles; or that there has been a strong smell of it in persons who have died apoplectic. An effusion has taken place into the ventricles of persons previously taking assafœtida; and it is said that there has been a strong smell of it in the brain. These things *may* be, and I suppose *have* been; but I have not seen them. Certainly, when persons have been unable to make water, and the urine has been retained, there can be no doubt that they have occasionally vomited urinous fluid, and even expectorated a fluid strongly smelling of urine. If this be the case, it is possible that such an occurrence may take place in the ventricles of the brain; but I can only say that I never saw but one instance of apoplexy from ischuria; and in that case there was no effusion of any sort into the brain.

The predisposition to this disease may be constitutional, or even hereditary;—an hereditary make of the head, neck, and body at large. Men who have a large thick head, are those that are usually affected; because that is not the shape for intellect. It is a *long-headed* man that is generally thought clever. Men with short necks, circular breasts, and not very tall, are certainly very liable to apoplexy. This is, of course, a constitutional make; and if it happen to be hereditary also, you may say that the predisposition to apoplexy may be hereditary, as well as constitutional. In the next place, indolence of body and mind will predispose to it. Persons who satisfy themselves with little exercise, and little mental exertion, have more or less congestion; and at last become apoplectic. It is said that Boerhaave had a student, who took it into his head that sleep was the natural state; and he slept as hard as he could, till at last he fell into apoplexy;—from the want of external excitement, he became apoplectic. If persons sleep too much, they become more or less plethoric, and liable to become apoplectic. Food too rich and too abundant, will have the same effect. Hypertrophy of the brain tends to produce this disease;—an occurrence which we might *a priori* expect. Over-nourishment of the brain is likely to dispose to congestion, and to an irregularity of the circulation. I once saw an instance of this kind; and only once. It occurred in a young gentleman, eleven years of age, who had a head bigger than most men;—in fact, it was too large for his body. He was remarkably clever, and was not contented with the society of other children,

but associated with his father and mother. He studied many things; but more particularly political economy. He was seized one day with hemiplegia, and had double vision; and the attack was soon followed by coma. Previously he had had double vision, and pain of the opposite side to that in which hæmorrhage afterwards took place. After death, the only thing I could discover was congestion in the brain; and I fancied that the corpus callosum was softened. A few minute tubercles were found in the arachnoid; but nothing to cause apoplexy. His brain was far larger than it ought to have been in a child of his age. The brains of very few adults attain so large a size. You will find a case in the "Dictionnaire des Sciences Medicales" (under the article "Rare Cases") of a German, who died apoplectic at the age of thirty. He had very powerful mental faculties. His head began to grow at seven years of age; and at thirty it was twenty-seven inches five lines in circumference. The rest of his body was not proportionate; and, like my patient, he died apoplectic. It seems that Morgagni and others have spoken of hypertrophy of the brain. From the excessive nourishment, the convolutions are very indistinct; and from the excessive substance of the brain growing out in all directions, and filling up the cavity, the ventricles are very small. The brain altogether, when you open the head, looks too large for the cranium; and the substance, too, is very firm. In the disease called "hypertrophy of the lungs," when you open the chest, the lungs are glad to make their escape,—to come beyond the limits of the incisions; and so, in opening the head, in these cases, the brain looks as if it were too large. Sometimes this hypertrophy is only *partial*; sometimes the *whole* is too large; and sometimes the spinal marrow is also affected. There can be no doubt that cases of this description, of which I have seen one, predispose to apoplexy.

Apoplexy is also predisposed to by the decline of life. Of the persons who die apoplectic, more have passed the meridian of life than not; with the exception of children, who die in consequence of effusion. Apoplexy, however, does occur in children every day. There is an inflammatory state of the head, whieh causes more or less effusion; but apoplexy from congestion of blood, and effusion through diseased vessels, generally takes place after the middle period of life;—more frequently than not. It occasionally takes place from the sudden cessation of a discharge;—from the cessation of the menses. You will have it after the menses have ceased, and sometimes from amenorrhœa; but not so frequently as might be imagined. Apoplexy is sometimes the result of old age; and after the cessation of the menses, women are getting old; but the utmost you generally see, when women do not menstruate regularly, is headache and giddiness. The suppression of hæmorrhoidal discharge, has produced apoplexy; and the cessation of a long continued cutaneous eruption, will do the same; and likewise metastasis, on the cessation of gout; and even, it is said, the removal of tumors.

Apoplexy is strongly predisposed to, by organic disease in the head;—in the brain, or in the membranes, or on the inner table of the bones, or in the whole substance of the bones. When there is organic disease outside the brain,—whether of the bones, or the pericranium, or the inner tables, or the dura mater,—then a person, from the excitement going on there, is very much disposed to this disease. Anxiety of mind has a tendency to produce it. When persons are very anxious, they soon experience heaviness of the forehead; and apoplexy is soon induced.

Many of these things, you will perceive, act by merely giving rise to excessive fulness; and if there happen to be, in the individual who is exposed to these predisposing causes, any organic disease of the vessels or membranes of the brain, you may see how easily the excessive load of blood there, may occasion apoplexy. When there is organic disease of the vessels, you will immediately perceive that it does not require a full habit, full living, a short head, and a thick neck, to induce the disease. If any of the vessels be diseased, though a person may be as thin as a lamp-post, and nearly as tall, he will be liable to apoplexy; and people wonder that a person so spare, should die of such a disease. It is so frequently the result of blood being effused through the vessels, that you must expect to see the disease in thin people;—not so often as in fat persons, certainly; but very frequently. It may arise without any fulness of the vessels whatever, but simply from one vessel, or a set of vessels, being brittle, or softened, or ulcerated, or labouring under some other disease; and as it will arise from mere fulness of all the vessels, the vessels themselves being sound, but suffering more or less congestion. You may therefore expect apoplexy in two very opposite descriptions of people; and when it arises from the state of the vessels, none of these other predisposing causes are required. A person may live the most abstemious life possible, and yet the vessels may let out the blood, and the person die apoplectic; so that no exciting cause may be required for it; and none of those predisposing causes which I mentioned, as operating by occasional fulness of the head.

As to the exciting causes of the disease, they may be equally influential in producing it, whether there is mere fulness, or organic disease of the vessels. Stooping, especially if a person make an effort while doing so, is a common cause of apoplexy. If there be previously present great congestion of blood, even without disease of the vessels, stooping will increase it to such a degree, that apoplexy may occur. Supposing there is brittleness of the vessels, stooping will have the same effect as if there were great congestion. You see that a common exciting cause of the disease, for the most part, will produce apoplexy; whether it arises simply from an over-fulness, or from disease of the vessels; because stooping, for example, is a violent effort; and will throw a great quantity of blood on the head; and will operate by forcing the blood through, or opening the vessels. Exposure to a very great fire, or being in a very close

apartment, are causes of the disease; and so likewise are the rays of the sun;—isolation. Intoxication, too, will frequently produce the same effect. Cold causes stupor. When persons are exposed to intense cold, they become exceedingly heavy;—they are disposed to sleep; and it requires a strong exertion on their part, to prevent them from going to sleep. When they travel over regions of snow, and have nearly perished from cold, if they give way to sleep, and lie down, they are sure to die. Yet they will be careless; and though their friends tell them of their danger, and entreat them not to lie down, the propensity to sleep is so great, that they cannot resist it; and the cold at last produces apoplexy. When a person falls into a sound sleep, I believe that death from cold is by no means unpleasant. Of course, it is unpleasant to be killed; but when persons are benumbed, they lie down quietly, in an apoplectic state. It is said by Portal, a French physician, that he found a rupture of a vessel in a person who had died in this state. It would appear others had observed, that cold killed merely by numbness;—did not kill by producing pressure; but simply by benumbing;—taking away all excitement from every part of the body, and the brain among the rest. I may mention that the late Dr. Kelly, in the first volume of the "Edinburgh Medico-Chirurgical Transactions," says that he found serous effusion, and great congestion of the head, in two persons who were destroyed by cold; but Portal says that he found actual rupture. Tight bandages round the neck, have frequently produced apoplexy, or threatened to do so;—that is, the person would have had it if they had not been loosed. You would suppose that the tight bandage which is applied by Jack Ketch, would occasion this disease; and Mr. Brodie says that, in a person who was hanged, he saw effusion of blood. Dr. Monro, likewise, says that he found, in two cases, congestion of the scalp, and congestion within the head. But this is not always the case. Persons who are hung, do not die of apoplexy; but of a want of breath. Occasionally it has happened that apoplexy has been produced;—not only extreme congestion; for Mr. Brodie (on whom we may place implicit reliance) has found rupture. Sometimes, after drowning, great cerebral congestion has been found; but there are several authors who deny the truth of this statement. Drs. Good, Winslow, and Currie, say that, after drowning, no congestion was found. Morgagni says that, after hanging, he found no congestion. De Haen says that, after hanging and drowning, nothing was to be found; and so says Dr. Kelly. It appears, therefore, that a person may be hanged or drowned, and no congestion nor rupture take place; but, in other cases, there may be rupture. People, from drowning, hanging, suffocation, and cold, do not die necessarily of apoplexy. There *may* be apoplexy in addition; but not necessarily so. I presume that a great deal will depend on the strength of the vessels. If the vessels be very strong, they will not give way;—they will not allow great congestion to take place; but if, on the other hand, they be weak, they will allow it; or, if they be diseased, they

will allow the blood to be effused. Anger has sometimes destroyed life by apoplexy. Ischuria renalis has been also found to produce apoplexy. Narcotics will give rise to this disease. They produce various disturbances of the brain;—sometimes delirium, sometimes more or less phrenitis, and sometimes apoplexy. They cause apoplexy, by inducing compression, where there is great congestion of the head; but, independently of producing this compression of the vessels, they do harm by their peculiar narcotic power;—by destroying the vital powers of the body; just as cold will produce death, independently of congestion.

Among the exciting causes of the disease, you find mentioned "lying on a millstone;" but I do not suppose that any one lies down in such a situation. If it do produce death, it is by the centrifugal force driving all the blood to the head; so that apoplexy is induced. Inflammation and suppuration of the brain frequently produce apoplexy. The inflammation goes on to such a pitch, that apoplexy at last ensues from the congestion. Suppuration within the brain causes such a collection of pus, as to compress it; and the compression may produce apoplexy. The pressure occasioned by a depressed bone, likewise gives rise to apoplexy. You continually see persons brought to the hospital, after an injury inflicted on the head, perfectly comatose,—in a state of apoplexy; and, when the bone is raised, they recover. Some, however, deny that pressure will produce these effects;—at least, they deny that the brain is ever compressed. They say that the cavity of the cranium must always be full;—that if you compress the veins, so that the blood cannot escape, so much less blood goes up to the arteries; or, if you quicken the pulse, and increase the usual quantity in the arteries, the veins contain proportionately less. Dr. Kelly, who takes this side of the question, says that he bled animals to death; and that he still found a great quantity of blood in the head; so that the cavity must be filled. If you press more in one way, more comes out the other; or, if you endeavour to withdraw the blood, you cannot; because the cavity must be filled, and therefore you can only take away a certain portion.

All this may be true; but yet I should think there may be more blood in the head at one time, than at another. The cranium may be full; but I should think there may be different degrees of packing. A portmanteau may be filled; but it may be packed tight, or packed loose; and when you see that, if a person stoops, he becomes stupid and sleepy and giddy; and that all the vessels of the external part of the head are distended with blood; and when you see him suffering something which, in a higher degree, would be apoplexy;—I cannot help thinking, that there is more blood in the head at one time, than at another. I should conceive that the cerebral substance may be pressed in a different degree. There must be a certain quantity of blood in the brain, resisting the entrance of more; but I should think that more might be *forced* upon the brain, so as to compress the cerebral substance, and bring it into a smaller bulk.

When the face is red and full, all the external veins turgid, and the person is labouring under evident external plethora of the head, and, at the same time, has signs of apoplexy, if you open him, you are almost sure to find the internal vessels of the head all in a state of congestion; and hence, to all appearance, there is far more blood in the head at one time than at another. If a person tie his cravat tight, he instantly has the external veins of his face filled; his eyes become red; he feels, at the same time, stupid and giddy; and if he do not loosen it soon, he is very likely to drop down. Some have denied that there can be congestion of blood in the head, from this circumstance;—that, after hanging and drowning, there has frequently no apoplexy been observed;—no congestion of blood, and no effusion; but, I presume, this will all depend on the strength of the vessels, or on the vessels not being diseased. If they be in this healthy condition, I presume they will resist an overload of blood, and not give way;—that they will not allow either rupture, or congestion of blood. It is well known that persons with hypertrophy of the left ventricle of the heart, frequently become apoplectic;—there being such a quantity of blood forced violently towards the brain. But it is said, that we every day see a quantity of blood violently driven up to the head; and yet no apoplexy is produced. I presume the reason is, that the vessels are so strong, that they will not become over-distended;—they will not give way; whereas, in other persons, they are diseased or feeble, and *do* give way; so that you have congestion. I cannot see the force of the argument that has been adduced. I will not deny that there may be only a certain quantity of blood in the head; but I do think that the cerebral substance may be more compressed at one time than at another;—that the contents of the cranium may be packed more closely. I cannot but conceive that there may be a great difference of packing in the cerebral substance.

Some contend, however, that we are able to say nothing about the existence of pressure; or, allowing that pressure does take place, they deny that it will produce apoplexy. There is a Frenchman, named Serres, who pretends that actual compression does not produce apoplexy. He trephined several dogs,—cutting out a piece of the cranium; and then wounded the brain through the aperture, so as to produce effusion of blood; and yet, he says, apoplexy did not occur. Whether we can depend upon his statements or not, I will not pretend to say; because some say we cannot. But if we can, I presume the reason there was no apoplexy was simply this; that if an opening were made in the cranium, the pressure would be *without* and not *within*; because the opening would allow the contents of the skull to be pushed forward. But, he says, after he had cut out a piece of bone, he took a cork and corked it up, so as to press on the brain; and no apoplexy was ever produced. I presume we are allowed to believe this man or not;—no effect was produced by putting a piece of cork on the brain, through a trephined opening! There can be no doubt that the brain will bear pressure, without

much effect being produced; provided it take place gradually. I believe I mentioned, at a former period, that a case is recorded by Dr. Heberden, in the "Transactions of the College of Physicians," of a man in whose head no less than eight ounces of water were found; and yet he had only been deaf. He died suddenly at last. Of course these eight ounces could not have been formed suddenly. Before death, he had one or two epileptic fits; but in the intervals he had all his senses and faculties. This was an instance of gradual compression. Sudden pressure caused by a less quantity would, I presume, have produced apoplexy. Dr. Marshall, formerly a lecturer and anatomist in London, mentions the case of a maniac who, a few hours before death, had become rational; and he found rather more than a pint of serum in and upon the brain;—shewing what may be borne, if the part be accustomed to it gradually.

When there is any tumor within the head, it will act (I presume) not merely by being a source of occasional irritation, but by occupying so much space in the cranium, that the least additional presence of blood upon the brain is likely to produce effects, which would not be produced if the tumor were not there. If the cranium, for example, be at all diminished by the presence of a foreign body, of course it can less bear any additional quantity of blood which may be forced up; and therefore tumours may act in two ways;—first, by exciting a sudden determination of blood to the head;—and, secondly, by filling up the cavity of the cranium so much, that even a little additional flow of blood cannot be borne;—there is no room for it. You will sometimes see cases of persons, who have died with a tumour within the head; which produced only occasional paralysis, or occasional loss of motion;—a kind of stupor. You may say there was no organic disease; because the symptoms were only occasional. That I know has occurred; and, I presume, from this circumstance;—that the tumor has gradually accustomed the part to its presence; and when apoplexy and paralysis have occurred, (as they have from time to time), it has been not exactly from the tumor being there; but from an additional flow of blood, which could not be borne. Thus the tumor itself was not the cause of the occasional fits of epilepsy; but it was the additional congestion of blood, which could not be borne, in consequence of the presence of the tumor, or something occupying the cavity of the cranium; for it is a fact, that we sometimes see persons with considerable pressure, as you would imagine; but as it came on slowly, the apoplexy, or paralysis, has only been occasional;—has occurred only when an additional quantity of blood has been forced to the head; which could not be borne, on account of the narrowed dimensions of the cranial cavity.

I need scarcely mention that, in apoplexy, the muscles are not in fault; although a patient cannot move them, any more than the cords of the nerves. The fault is in the head; and therefore, when galvanism is applied to the muscles, it acts upon them as it did before. Dr. Wilson Philip says, he has found that the muscles are

as irritable as in health. They are all ready to do their duty, if orders be given from "*head*-quarters;" but, no orders being given, they are paralysed. This is not more than you would suppose *à priori*; but it is well to prove it experimentally; and Dr. Wilson Philip has done so.

Of course, in this, as in every other instance of disease, if there be an evident exciting cause still in existence, and removeable, we should remove it. Supposing it arises from the depression of a piece of bone, that is a surgical case; and no medicine in the world can remove the symptoms, while the bone remains in that position. In all probability, it would be a proper practice to attempt the elevation of the bone. The pulse has sometimes been quite imperceptible, while the bone was depressing the brain; but immediately on the bone being elevated, it has become strong. Mr. Brodie mentions such a case. He says the pulse was only 40, while the bone was pressing on the brain; but on its elevation, it instantly rose to 60. If we know that the apoplexy has arisen from any thing taken into the stomach, we should adopt proper steps to evacuate that organ; that is to say, emetics, or mechanical means;—the stomach pump.

If, however, it be an ordinary case of apoplexy, the first thing to be done is to raise the person's head and shoulders, to loosen every thing about his neck, and to open a vein in the arm, or the jugular vein. As to the quantity of blood to be withdrawn, I need not say anything; for that must depend on a thousand circumstances. The next thing should be to give a full dose of purgative medicine;—a drop or two of croton oil, or a scruple of calomel. Perhaps it would be well to give a dose of calomel, whether you add any thing to it or not; because early ptyalism, after apoplexy, often appears useful. There is effusion left, for which ptyalism is apparently useful; and it is well to lay the foundation for it, by beginning with calomel as a purgative. As it is best to open the bowels very speedily, a strong purgative injection should next be given. The state of the brain causes the heart to be more or less torpid, and likewise the alimentary canal;—giving rise to a slow pulse, and torpidity of the bowels; and a clyster of oil of turpentine (two or three ounces) answers very well. Whether it is objectionable on account of stimulating the brain, and producing vertigo, I do not know; but I am not aware that I ever saw harm arise from it. A good clyster is one of the best things;—salt, or an infusion of the extract of colocynth, answers very well. It is made in a moment; and may be exhibited in gruel, or barley-water. It is very useful to apply water to the head;—much more so than a blister. You generally find the head hot; and ice applied in a bladder, is exceedingly serviceable. The patient should be kept very low; and sinapisms applied to the feet or legs, may be useful. But the great point is to raise the person; to keep him as upright as you can; to loosen every thing about the neck; to bleed freely; to give an active purgative; and instantly, without waiting for the operation of this purgative, to introduce a strong acrid injection into the rectum, and to apply ice to the head.

It would be well, afterwards, to continue the calomel till the mouth is tender; and that on two accounts. First, the head is frequently found hot in this disease;—it is so often an inflammatory disease; secondly, you frequently find the blood buffed and cupped; and I may say, in the third place, we so often find paralysis occurring; and that appears to be the result of effusion, the excess of which should be absorbed. Calomel may be useful in that respect.

Great care, however, must be taken not to carry this too far; for there can be no question that persons will sink after a time, entirely from these measures being pushed beyond what is proper. Although you starve the patient the first few days, you must ultimately give him support. I am sure that some persons have had apoplexy, from having been bled too frequently, even locally; and from having been deprived too long of food. It is all very well in the first instance; but if the patient begin to sink, you should not go on evacuating. It is necessary to get the mouth sore, and then to apply a blister behind the ears, and over the head; and after a time, if you please, over the *whole* of the head; but great care must be taken not to evacuate too much.

There was formerly a distinction drawn between *serous* apoplexy and *sanguineous* apoplexy;—" serous," where it arose from effused serum; and " sanguineous" where there was great congestion of the vessels, or rupture. Now taking this distinction literally, it is altogether absurd; as will immediately appear when you consider the indications of cure. It was supposed that when there was *sanguineous* apoplexy, you were to bleed, purge, and starve; and when it was *serous*, you were to support the patient well; because it was a case of apoplexy from the oozing of water. That was absurd, because you may have serum where the inflammation is more or less severe;—you may have serum in a case where it is quite proper to bleed, purge, starve, and apply cold. Common inflammation of the arachnoid membrane, whether it be active or not, will produce it; and, in the next place, where you have effusion of serum, you continually have great congestion of blood. You may have it in both cases; and nothing is more common, when you find a vessel ruptured in the head, than to find serum effused upon the brain, and outside the head. Serum, in this case, as in its effusion in all other parts of the body, may be the result of weakness, the result of congestion, or the result of inflammation; and therefore you see that no treatment of apoplexy can be founded on the presence or absence of serum, even could we tell it beforehand, any more than an indication of practice can be drawn from serum in other parts. You may have serum in *peritonitis*, and yet you may have to treat the case as *active* peritonitis; or you may have to support the patient well, and to give stimuli; and the same remark applies to the brain. Hence this distinction is not founded on pathological principles. Where a person looks full of blood, we must treat him by depletion; but where he looks pale, watery, leucophlegmatic, and has a weak pulse, (as if the effusion were serum), then you should not employ active depleting measures, but be exceedingly careful; and perhaps you

may have to support him. There is a distinction to be drawn; but it is not because there is serum or no serum, but because in the one case there is a state of fulness and congestion, and in the other a state of debility. It is necessary to consider the powers of your patient. In some of these cases, you find the patient looks as though he would be dropsical in the head; and every other part of the body is pale and white; and if an effusion of serum took place, it would be more from weakness than any thing else; yet in such persons as these, after death, you continually find congestion, and more or less organic disease, giving rise to the effusion of serum. You must depend on the state at large, and proceed on general principles; and not as to whether there may be serum or not; for you cannot tell its presence *à priori*.

After the fit is over, and the patient has recovered, it is necessary to pursue the general treatment which you adopted during the fit; only on a more moderate scale. If it be necessary to bleed copiously, to treat the case very antiphlogistically, or in a very depleting mode, of course the patient should be very abstemious in his diet, should keep an open state of his bowels, and use (though in great moderation) all those measures which are calculated to prevent a phlogistic condition from occurring. If a patient have not borne an evacuation during the disease, of course a more general diet must be allowed; —you need not be so strict. Dr. Babington, from his extensive experience, became convinced that many persons were made to suffer exceedingly, from having antiphlogistic measures carried too far;— not only from the very outset, but afterwards. He says that he found great advantage, after a time, from the moderate exhibition of tonics. There is one kind of apoplexy in which it is necessary to give a particular remedy, or you will be sure to lose your patient; and that is apoplexy arising from the suppression of urine. I believe, in that species of the affection, evacuants do little or no good; but that cantharides, employed both internally and externally, are the proper remedy. It is well to resort to them always; and to give a grain two or three times a day. I should not recommend the tincture; for I believe it is uncertain in its operation. I have given two or three drachms, two or three times a day, without any effect; and sometimes I have given the same quantity, and found great irritation. I do not think there is a more uncertain medicine in the Pharmacopæia, than tincture of cantharides; nor do I think there is a more certain one than the powder. If you give a grain, or two grains, every night, or night and morning, you are almost sure to make the bladder perform its functions. The only experience I have had of cantharides internally, has been in cases of gleet; but it has been unsatisfactory on account of the people being out-door patients; so that I had no great controul over them; and therefore I cannot speak as to its powers. I have no experience of it in apoplexy from ischuria. I applied it in one case; but the patient died in twelve hours, so that there was no time for it to do him good; but a gentleman told me, that he had seen it successfully exhibited in two cases.

In the first case, Sir Astley Cooper suggested its employment; and although an unfavourable prognosis had been given, the patient recovered. The second case, shortly afterwards, fell under the same gentleman's care; and he adopted the same remedy with equal success. It does appear that, in this kind of apoplexy, stimulation of the urinary organs is the proper remedy.

I must here draw your attention to a fact, perfectly analogous to that which I mentioned respecting the hydrocephalus of children. I stated that children were occasionally subject to hydrocephalus from mere excitement; that their pupils became dilated; that they would fall into a state of coma, and perhaps be convulsed; and that if you bled them, you would destroy life; whereas, if you gave ammonia and beef-tea, and supported the child well, it generally recovered. I mentioned that there was a similar state in delirium, called "delirium tremens;" which state, in the greater number of cases, is not at all inflammatory; and must be treated by opium, and not by bleeding. Now adults will sometimes fall into a state of apoplexy from downright exhaustion; and this is called "apoplexia *exsanguinea*." Dr. Abercrombie says that he has seen adults comatose and collapsed; the pulse not full; the lips not purple; and the face not turgid. You will recollect that, in apoplexy, the face is turgid, and more or less livid; but in this form of the disease, the face is collapsed and pale; and notwithstanding the pulse may be full, Dr. Abercrombie states that, in this condition, the diagnosis is to be drawn from the paleness of the face. He says that he has seen it arise from neglected diarrhœa. Starvation might probably sometimes have the same effect. He says that he has seen the state, in an old lady, amount to a loss of memory and squinting; and he mentions one case, in which a person was regularly deaf (paralysed in one sense) when in the erect posture;—when less blood goes to the brain, and more freely escapes from it; whereas, as soon as the patient lay down, the deafness ceased, and the face became flushed.

Now it is very necessary, in looking at a case of apoplexy, to ascertain whether it is of the kind you see in nineteen cases out of twenty; or whether it arises from a state of exhaustion of the brain. If it be a case of the latter description,—if the face be pale and collapsed, you have reason to believe that the patient has had causes of debility applied; and then, certainly, it would be necessary to give ammonia. Ammonia is preferable to wine; because wine might perhaps induce too great a stimulation of the brain, which would last afterwards; whereas the stimulus of ammonia is very evanescent. There will of course occur cases, in which you will be much distressed;—being unable to make up your mind as to what ought to be done. The same circumstance occurs in the treatment of inflammation. You will recollect I stated that, at last, you will be unable to make up your mind, how far there is *irritation*, and how far *inflammation*. In such cases it is best to mix the treatment. Evacuate as much as you can; pply blisters rather than leeches, leeches rather than cupping, and cupping rather than bleeding at the arm; and,

at the same time, give moderate diet and ammonia. The operation very soon ceases; and if you see it do harm, the effect is over, and there is no serious mischief. This is the advantage of combining both plans.

I may mention that, it is said, apoplexy and palsy have very much increased of late years. Dr. William Heberden, the son of the author of the "Commentaries,"* has written a very excellent paper, upon the increase and decrease of different diseases; and he states that the increase of apoplexy and palsy has, of late, been gradual and constant. His paper was written about fifteen years ago; and there is double the number of these cases now;—not *absolutely*, but in proportion to what there was a hundred years ago. Whether people drink more porter and strong malt liquors now than formerly, I do not know. The upper orders drink less wine; but the lower orders may drink more porter. I do not know how it is to be explained; but there are double the cases now, in proportion to the population, that there were a hundred years ago. Sir Gilbert Blane mentions, that he had more apoplexy in the hospital, than in private practice; and the people who go there certainly drink more porter, than their superiors in society. I suppose porter or spirits, or both, have more tendency to produce the disease, than wine. If it were the wine which produced the disease, as that is now so much less drunk than formerly, the proportion of cases would not be what Dr. Heberden has stated.

PARALYSIS.

The next disease to which I shall call your attention, is one which very often follows apoplexy; and is the result of that state which, in the first instance, is apoplectic. I refer to paralysis. It may be defined to be a loss or diminution of sense, or of motion, or of both; independent of any stiffness of the part, or of inflammation, or any mechanical impediment; but dependent entirely upon the condition of its nerves, or some other part of the nervous system.

This disease frequently begins with sopor; or even with coma, and downright apoplexy. If it begin with a great degree of heaviness, it is called *sopor*,—"sleepiness." It is usually divided into three varieties: *hemiplegia*, affecting one-half the body divided *vertically*; *paraplegia*, affecting one-half the body divided *horizontally*; and *paralysis partialis*, affecting only one particular limb, or one particular sense. The partial paralysis may be of the eye,—*amaurosis*; of the smell,—*anosmia*; of taste,—*ageustia*; of the touch,—*anæsthesia*; or of hearing,—*dysecœa*. There is no particular name for paralysis of one leg, one arm, or one side of the face.

The disease may not only vary according to the part it affects, but it may also vary in degree; so that the person shall have no use whatever of his senses, or of a portion of his body; or he shall

* Of these Commentaries Dr. Elliotson observed, that they are an excellent book to read for a description of certain diseases, but not for any thing else; for the treatment recommended in them is not very vigorous.

have a use of them, only that it is impaired. Then the paralysis may differ according as it affects sensation, or motion, or both. It is very common to see paralysis affect only sensation; this must, of course, be the case with parts which have naturally no motion. If such a part be paralysed, it must be paralysed in *sensation*. With respect, for instance, to the internal part of the nose, the paralysis which affects it, must clearly be a paralysis of sensation; and so with respect to the internal part of the ear, and likewise of the eye. If the paralysis be within the orbit, so that motion is affected, it is not the fault of the eye, but of the muscles which move it; but paralysis affecting the globe itself, must be paralysis of sensation. Sometimes, however, in the *extremities* we have a loss only of sensation; but that is rare. Sometimes you will see a person lose the sense of touch, in particular parts of the body; but it is not of frequent occurrence; for generally, where a part is endowed with both sense and motion, the part either has only motion affected, or sensation and motion together.

There is still another variety. When a part is paralysed both as to sensation and motion, the proportion of the two is very various. Sometimes a person shall be powerless entirely in a limb, or in one-half the body; and yet he will *feel* a little, while he cannot *move* at all; and sometimes the paralysis will be so perfect in both respects, that you may pinch him as hard as you please, and he may endeavour to move as much as he will, and yet both will be in vain.

There are some still rarer varieties than these. What I have now mentioned is almost of daily occurrence; but there are some variations not so common. For example, a person will sometimes lose *sensation* on one side of the body, and *motion* on the other. He may lose sensation as to a leg, and motion as to an arm; and *vice versâ*. There is even a more minute variety than this. There will be a *perfect* loss of sense and motion in one limb; while in another limb, on the same side, the loss of either sensation or motion is *imperfect*. The patient will *feel* a little with his arm, although he cannot *move* it; while, in his leg, he can neither feel nor produce the least motion. Nay, what is still more curious, this state has sometimes alternated. The part which could not *feel*, has become *motionless*; and the part which was *motionless* has, by and bye, lost *sensation*.

Sometimes, when half the body is paralysed, the other half is in a state of great agitation, and convulsions. These are cases of rare occurrence, but you will find them mentioned by the most respectable authors; so that there is not the least doubt as to their truth; though, in general, they are cases you will not meet with. Occasionally there is an opposite state to the *loss* of sensation;—the senses become morbidly *acute*; so that a person is quite powerless as to the *motion* of an arm or a leg, on one side of the body; and yet he will have such a morbid acuteness of *sensation*, that the creeping of a fly along the arm, will give him great uneasiness. I have seen many persons who could not use their arm, or tell you if a fly lighted upon it; but occasionally there has been such a morbid degree of sensibility, that the descent of a fly upon them has been most uncomfortable.

You will, I dare say, meet with cases, where there is a morbid sense as to temperature, in the paralysed parts. Some persons whose limbs are paralysed, cannot, in the paralysed parts, bear the slightest breath of cold air. It has often been known to excite convulsions. But, more frequently, patients will feel parts which are only of a *moderate* temperature to be exceedingly *hot*. I have met myself with several cases of this description. I recollect that the first of the kind which occurred to me, took place in a gentleman, who was first induced to think there was something the matter with him from what he experienced on going to the water-closet. When he took his seat, he felt one side so hot, that he thought some person in a burning fever must have been there before him. He wondered how the heat could be on one side; and he soon found that if he clapped his hand against the part, it felt hot. He tried the other side; but no such sensation was experienced. It excited his astonishment; and he soon found that, as he walked along, he shook his toe about. After a time, giddiness and hemiplegia occurred; and subsequently paraplegia of the lower extremities; of which he died. Some not only feel every thing hot, in this way; but they have a constant burning sensation, whether the parts are touched or not. This is very different from what you often see; for some persons (*many* indeed) have so little feeling, that a red hot iron has been applied to the paralysed parts, for medical purposes; and yet not the slightest heat has been felt. Many paralytic persons have sat near a fire, and their legs have been charred; and yet they have known nothing about it, at the moment.

I have seen many cases such as that I have just mentioned, respecting a morbid sensibility to heat; and it is a thing which has long been mentioned. You will find it adverted to by old, as well as by modern authors. The cases are by no means uncommon. Dr. Heberden mentions a case of hemiplegia, where there was a morbid sensibility of the sense of smell;—where the patient smelt every thing so acutely, that any strong odour gave him great pain. He reminded one of Pope's line,—

"Die of a rose in aromatic pain."

This I have never seen; but I have had two or three extraordinary cases of paralysis, where persons had a morbid sensibility to cold. I made a note of one, which occurred in December, 1823. A man, aged fifty-six, had been for twelve years so sensible to cold, that he had regularly worn four flannel waistcoats; and on his wife once putting her foot against him in bed, he had rigors; which made the bed shake, and lasted for a whole hour. Once, he said, his granddaughter put her cold hand upon him; and he felt an icy coldness in that spot for a month. Three years and a half before I saw him, he had a fall on the back of his neck; and from that time he had been considerably worse, as to all these sensations. He had vertigo; and laboured under a loss of the power of attention. He could not fix his attention; and his spirits were much depressed. I found him

thirsty and flushed, and frequently he had heat all over him; but, notwithstanding that, he always felt cold. But though he felt cold, no one else, on touching him, could discover that he was so. I had another patient under my care in 1829;—a man forty years of age. He had a morbid sensation of coldness,—a morbid sensibility to low temperatures, throughout his trunk and along his arms, as low as his elbow; but no farther. He said that things of an ordinary temperature felt cold to him; and when he put on a calico night-shirt it felt, at first, as though it had been dipped in cold water; and the sensation remained for a quarter of an hour. The sensation of putting it on next to his skin, would have been intolerable; and therefore he was obliged to case himself in flannel; and he kept his flannel waistcoat on as long as it would stay. He said that hot things felt hot; but that any thing of a low temperature felt exceedingly cold.

It was owing to observations of this description, that Dr. Darwin imagined (and perhaps others did the same) that there must be a particular set of nerves for temperature. Seeing that persons sometimes lost the sense of touch, and yet had a morbid sensibility of temperature,—sometimes feeling things very *hot*, and sometimes very *cold*,—he drew the conclusion to which I have just referred. It was analagous facts to these that led persons, ages ago, to imagine there must be a distinct set of nerves for motion and sense; and the fact has since been proved by Sir Charles Bell, and still more fully established by Magendie. A French surgeon (who published in 1780) states, that there must be distinct nerves of sense and motion; because sometimes the function of motion only was affected, and sometimes only sensation. That has been proved to be the case; but it has never been proved in regard to temperature.

Respecting the temperature of paralysed parts, I may mention that it generally follows the temperature of the surrounding air, or of bodies placed in contact with the part affected. It is said that the temperature of the paralysed parts, is generally below what it ought to be; but that is not a proper expression; and I think Dr. Abercrombie's statement is the most correct;—namely, that the temperature of the paralysed parts, follows the temperature of the surrounding medium; that is, they will get hot sooner than other parts, and cool sooner than usual. Now the temperature around, is almost always *below* the temperature of the body; and the paralytic parts follow the temperature of circumambient things, more like inanimate parts, than parts endowed with life. You will find this explanation in Dr. Abercrombie's work; and it appears to me correct.

Paralysis may invade very slowly,—quite imperceptibly; or it may attack very suddenly. After it has once begun, it may extend or not; and it may proceed very slowly or speedily; and may likewise increase in intensity, or never increase at all. The patient may live many years, without any further increase. It may, therefore, take place suddenly, or very slowly; it may remain stationary, or it may cease; or, if it do not cease, it may remain stationary, or it may ex-

tend; or, on the other hand, it may become more intense. Sometimes one organ becomes affected after another. Occasionally it is intermittent, and even periodical. I had read of such cases in authors; but I never met with an instance of it, till last year; and then I met with a case, which was decidedly intermittent; and, indeed, in some measure periodical. The attacks always came on about half-past ten, or eleven o'clock in the morning. They did not always occur after the same interval, though sometimes they did; but the hour at which the invasion took place, was always the same. After the lapse of many months, the disease became less; ceased to be periodical; and appeared to have more of the form of fixed paralysis.

Paralysis is very frequently united with other nervous diseases; particularly with mania and epilepsy. Persons who are epileptic, frequently become paralytic at last; though perhaps, if they be adults, not till after many years have elapsed. Insane persons, too, frequently are seen to be paralytic. When recovery takes place, it is in general very slowly; but sometimes, though rarely, recovery is sudden.

This disease may be induced by any thing which compresses a portion of the nervous system; which *divides* any portion of the nervous system; or by the disorganization of a portion. It is obvious, that, whether a part of the nervous tract be *compressed* (so that the function cannot continue along it) or whether it be *divided* (so that the function cannot continue along it), or whether it be *disorganized*, the result must be the same. Accordingly, if a nerve be divided, the parts below are paralysed. If the spinal marrow be divided, or completely compressed, or softened at any spot, the parts below are necessarily palsied. The compression may arise from fluid effused around, from fluid effused in the substance, from a collection of blood, or, in fact, from any thing capable of producing pressure. But sometimes the disease would appear to arise independently of compression, division, or disorganization. The nature of this state we cannot exactly ascertain; but the part is unfit for its functions. Lead will have this effect; and arsenic, together with various other poisons, will deprive a part of the power of continuing its functions; so that paralysis takes place, without our being able to say what is the exact effect produced by these agents. Cold, likewise, will produce paralysis. If a part be exceedingly benumbed, it produces common paralysis, for a longer or shorter time afterwards.

Although I am not aware that any difference would be discovered by the eye of an anatomist, in examining the parts, yet the higher the source of the disease, the more extensive are the effects; so that compression, division, or disorganization of the lower part of the spinal marrow, does not produce so extensive a paralysis, as the same causes acting higher up; and if the cause be within the head, (in one of the hemispheres, or one of the thalami nervorum opticorum, or one of the corpora striata), patients generally have paralysis of the upper part of the body. The cause of hemiplegia, therefore, is in

the brain. If *both* sides of the brain be compressed to an intense degree, then you have apoplexy; for apoplexy is evidently double hemiplegia. If the cause, on the other hand, be very *slight* pressure within the head, you have an exceedingly slight paralysis;—merely a little numbness at the ends of the fingers. Many persons who have a little fulness of the head, will have a numbness at the end of the fingers, and tingling; and on bleeding them it will go off. You have every degree of paralysis according to the pressure. If the pressure be inconsiderable, you have no more than an affection of the nerves, at the most opposite part of the brain.

HEMIPLEGIA.

I shall speak, now, of the *particular forms* of paralysis; and, in the first place, let us consider hemiplegia; (which derives its name from ἡμισυς, *half*; and πλησσω, *to strike*). In this disease, one half of the body (divided *vertically*) is paralysed. There is generally no loss of sight, or of smell, or of taste, or of hearing. Indeed, there is one case to which I before alluded, put on record by Dr. Heberden, where an individual labouring under hemiplegia, had an extraordinary *acuteness* of smell. But, in general, when you see paralysis down one half of the body, it is not *perfect* paralysis; in so far as the eye and ear of that side, half of the nose, and the tongue, have their senses acutely enough. This form of paralysis, very often, is united with more or less delirium and phrenitis. It frequently attacks those who are fatuitous; or who labour under mania. It may be a mere hysterical affection, and soon recovered from. The *other* forms of paralysis may be hysterical; but hysteria, when accompanied by paralysis, is perhaps more frequently accompanied by hemiplegia, than by any other form.

With regard to the side affected, Sir Gilbert Blane says, from some comparative observations made by him when physician at St. Thomas's Hospital, that he found *three* cases of hemiplegia on the *left* side, for *two* on the *right*. I have not myself made any comparative observations. The pulse, in the paralytic side, is smaller than on the other.

Hemiplegia is, very commonly, a sequel of apoplexy. When a fit of apoplexy is over, and paralysis is left, the form is usually hemiplegic. Generally, when hemiplegia occurs suddenly, there is a degree of apoplexy;—an imperfect apoplectic fit;—a degree of drowsiness and sleepiness. There may be no stertorous breathing; but the person generally loses himself for a time. I think hemiplegia more frequently commences in that way, than in any other; but where a person has a downright attack of fully formed apoplexy, the disease is very likely indeed to follow. Serres (the Frenchman to whom I formerly alluded) says, that of one hundred cases of apoplexy which he examined, seventy-nine of them were complicated with palsy;—so frequently is apoplexy followed by palsy. Occasionally there is not only no real perfect apoplexy, but no sopor;—no loss of the individual to himself for a time; but merely vertigo;—a little

confusion; and then, to his great astonishment, the patient finds an arm or a leg palsied.

An attack of this description I think, more frequently occurs in bed, than in any other place. Many persons who lose the use of one side suddenly, and who have no decided apoplectic attack, tell you that it happened in bed;—that they woke in the morning, and found themselves in this situation; or that it occurred late at night, or very early in the morning. Occasionally, however, this form of the disease begins very slowly; commencing in the fingers or in the toes, and creeping up; and occasionally, where it does begin suddenly, the person first loses the use of a leg or an arm, and then, an hour afterwards, (or a day, or a week afterwards), he loses the other member of the side which was not previously affected.

From the voluntary muscles of half the body being more or less deprived of the influence of the will, the face is usually drawn to the opposite side. From the muscles losing the influence of the nerves connected with the brain and spinal marrow, they are more or less powerless; and the muscles of the opposite side, which are in due connexion with the brain, get the better of them, and master them completely; so that the face is drawn to the healthy side. The tongue, if it be drawn at all, is usually drawn to the same side, on account of the operation of the muscles. From the impaired state of the muscles of the mouth and tongue, the person does not swallow his saliva as soon as it is formed. We are always getting rid of it in health more or less insensibly; but for want of this voluntary action, it collects to a certain amount, and then runs out of the corner of the mouth; so that the patient slobbers. If the disease affect the mouth with any intensity, the voice is thick, from the affection of the muscles of the throat. You observe the patient's utterance is altered; he "clips the king's English," as people say; and perhaps he can scarcely pronounce his words with sufficient distinctness to be understood. If the paralysis be perfect, the face and gait of the person at once shew the nature of the disease, without your asking a question. You observe that the mouth is drawn to one side; the saliva runs out; the arm hangs useless; and, if the patient attempt to walk, he drags the affected limb in a sort of semicircular manner; having the ball of the great toe, for the most part, in contact with the ground.

When the disease continues for any considerable time, the limbs waste;—they become flabby to the feel, and waste in size. The mind, too, generally suffers a little. The patient does not find his attention so good as it was before; nor his memory. His feelings are much affected; so that he is disposed to burst into tears, without any evident external cause; and he is, for the most part, very peevish. I mentioned, when speaking of tetanus, that Sir Gilbert Blane informed me of a case, which was accompanied by pleasurable twitches; and Dr. Cook, in his work on Nervous Diseases, mentions the case of a person who had been very captious; but who, after a fit of palsy, became the most good-natured person possible. The symptoms which occurred at the time of the fit, or preceded it, (such as

vertigo and headache), may continue afterwards, and may increase. You will find a great variety, as to the effects of sense and motion, in the affected part. Sometimes the person retains his *feelings* perfectly; but loses all power of motion; and, in other cases, a person loses both; but it is a very rare thing indeed to see a loss of the sense of touch. You usually see motion impaired or destroyed; and sensation more or less so, or not at all.

This disease, very frequently, does not *follow* apoplexy; but is itself *followed* by apoplexy. You may well imagine that, if the cause be in the brain (although, at first, it may be so inconsiderable, as only to be just sufficient to produce hemiplegia), yet it may, if the morbid process go on, become more considerable; and, at last, it may be sufficient to produce apoplexy. While apoplexy sometimes leaves hemiplegia, hemiplegia is sometimes followed by apoplexy. When the disease diminishes, I believe (for the most part) you will find that the arm mends last;—that, after the patient has begun to walk tolerably even with the affected limb, his arm long remains useless at his side; and sometimes it never recovers. There is a variety in this; but, more frequently than not, the arm recovers last; and very frequently it does not recover at all. Some person recover both limbs at once; but if there be any difference, it is in favour of the leg. While you will see in some persons complete recovery, you will see in others no recovery at all; and while some will get worse, others will remain stationary. Some persons will live ten, or perhaps fifteen years, in the same state. You will see another difference. They will mend up to a certain point;—perhaps for a year or two; and then never advance farther.

This is a disease which may occur again and again. Recurrences of it are frequently seen. It is a disease which I have seen, several times, in children; and I believe, more frequently than not, they recover from it.

The cause of this particular form of paralysis, is sometimes mere fulness about the head;—fulness which is often transient; and therefore the disease is transient. Frequently there is found, after death, serous effusion; and that, perhaps, in a very inconsiderable quantity, even where the paralysis is very great; and perhaps the effusion is rather the effect of the morbid cause which induces the paralysis, than the cause of the paralysis itself. Effusion, however, is often the cause of paralysis. The most frequent state of the brain which I see, (and therefore, I suppose, which other people see), is a softened state of some one spot. It is curious how small a portion is sometimes sufficient, when softened, to give rise to this disease. Occasionally the softening is very great;—extending over a great part of one of the hemispheres, or the corpus callosum. This softening, in many cases, is clearly the result of inflammation. A chronic inflammation of the brain, certainly often precedes this softened state; and very frequently it follows an acute inflammation of the brain. You will see persons seized with acute inflammation of the brain become paralytic; and will afterwards find the brain more or less softened.

You will sometimes see patients the subjects of this disease; in whom the disease will increase. They become delirious; perhaps have epileptic fits; and the head is very hot. All the time they are delirious, they are complaining of great pain of the head; and on opening them, you find a portion of the brain softened; and around it you find the vessels red, and the red vessels even running through the softened spot. There can be no doubt, in such a case as this, that the disease is the result of inflammation. I have frequently noticed (and others have done the same) that after paralysis has begun, although there may previously have been no great affection of the head, the head will sometimes become affected. You see patients gradually complain of more and more pain; gradually have the head more and more hot; gradually become more and more delirious; and then they will die. It appears as though, at first, there had only been softening enough to produce paralysis;—only enough to produce inflammation; and the latter has then gone on to a far greater extent. It is said by some (but I do not know whether they have good reason for it) that when there is softness of the brain, it is analogous to the gangrene of other parts. This is supposed to be the case by Dr. Hooper, and others suppose the same thing; but whether it really is the case I do not know. A part may be softened, without our supposing it to be gangrenous;—without there having been symptoms of gangrene; but it is the opinion of some that the softening is analogous to gangrene. There can be no question that this softening of the brain is, sometimes, not inflammatory; for it is accompanied by paleness, not only in one spot, but all around. If there be inflammation, it shews itself in a very odd way; for the part is white all around. I can suppose that the brain may be broken up, without inflammation; just as the coats of the stomach may sometimes be found perfectly pulpy, and perfectly pale.

Occasionally the paralysis, in hemiplegia, has been induced by a coagulum of blood; and this coagulum may be of all sizes. When paralysis comes on in a moment, without any previous inflammation, I imagine that in general there is an effusion of blood. Apoplexy may be the result of the effusion of blood; but when the apoplexy is over,—when, I presume, that general state of congestion of the blood-vessels which was sufficient to produce apoplexy, has gone off,—then there remains a clot, just sufficient to produce hemiplegia; and you will recollect the process I mentioned as then taking place. The blood becomes absorbed;—sometimes leaving a cavity, and sometimes not; the parts then all become contracted together; and a cicatrix is formed. Around this spot, the brain is generally softened. I mentioned this circumstance, as taking place in apoplexy; and it also occurs in paralysis. The paralysis arises, I believe, from what remains after the clot has been absorbed. The brown, dark-coloured substance, which is sometimes taken from the brain of a hemiplegic patient, I should imagine to be the remains of blood.

The blood was nearly all absorbed; but the brown softened part left behind, was quite sufficient to produce paralysis.

I may mention, that Dr. Abercrombie says a cyst will form round a clot of this kind, even in a fortnight. Whether extravasated blood can be absorbed from a ventricle, if effused in any quantity, I do not know, but I should think not; because, in most cases of that description, the blood has lacerated the brain externally;—has forced its way from the substance of the hemisphere, into the ventricle. Four ounces of blood have been found after paralysis, in a cavity formed in the brain. When the brain has been softened, and has produced hemiplegia, or fatuity, or only an aberration of the mental faculties, the vessels will sometimes suddenly give way; and then you have apoplexy;—an effusion of blood suddenly takes place into the softened part. Softening is supposed, by some, to resemble *gangrena senilis*;—that gangrene which takes place in the toes of old people, from ossification of the small vessels. Some will have it, that it is not the result of inflammation; but of disease of the vessels, affecting the circulation. I should imagine the truth to be, that it is the effect of different circumstances;—just like every thing else. That inflammation will soften the brain, there can be no doubt; and if the vessels be obstructed, so that the part is not nourished perfectly, then also it will become soft.

Pressure from an abscess,—pressure from various tumors formed upon the surface of the brain, (whether they be encysted, carcinomatous, melanotic, or of any other kind), may have this effect. It has sometimes been occasioned by the pressure of an exostosis, from the bone growing too much in one particular spot, so as to compress the brain. Excessive thickening of the membranes, has given rise to the disease; *white* tumors, *reddish* tumors, *scrofulous* tumors, tumors of all descriptions, and hydatids, have been seen in this disease, pressing upon the brain, in different parts.

It is a well established fact, I think, that the disease occurs on the opposite side to that in which the cause of it resides. The observation of this fact is so universal;—so many persons, who have extensive opportunities of examining patients, assert that they never met with an exception to it, that I cannot but think the few exceptions on record must have been mistakes. Serres says that he opened one hundred and seventy cases of apoplexy united with hemiplegia; and that in all those cases the affection was on the opposite side. He opened forty-seven cases of mere hemiplegia; and there the affection was on the opposite side; and that in about one hundred and fifty cases of paralysis detailed to him, the results were the same. I never saw an exception to it; and many authors say the same. There are a few instances to the contrary on record; some of which I have looked over; and to me they are any thing but satisfactory. In some of these, there could be no doubt, other morbid appearances were found at the same time; so that, in all probability, sufficient attention was not paid to the opposite side.

In general the brain is sliced very rapidly; and morbid appearances in the brain, I know, are every day passed over. On the other hand, when the *spinal marrow* suffers compression, or any cause sufficient to induce paralysis, the disease occurs on the *same* side.

The cause of hemiplegia is *generally* within the substance of the brain; and pressure of the brain usually produces apoplexy; so that, I conceive, we have a reason for apoplexy occurring so often first, and leaving hemiplegia behind. Apoplexy generally arises from a mere temporary fulness of the vessels of the head. It goes off; and then some injury occurs at one particular spot, and is sufficient to produce hemiplegia. Local pressure on the surface of the brain, however, may likewise produce the disease; and local pressure on any part of the brain, if it be very intense, will produce apoplexy; because pressure in any one spot of the brain, if it be intense, will necessarily compress the whole.

A very curious symptom is sometimes observed in hemiplegia; and that is a loss of verbal memory. This is quite distinct from a loss of the power of utterance. Persons, in general, in this disease do not speak well; because they have not full power over the voluntary muscles of articulation; but, sometimes, if they *can* speak well, they have not a proper word in their mind; and they cannot make themselves understood. Some forget entirely the meaning of words; some forget entirely the meaning only of *names;* and some do not forget these *entirely*; for the moment the proper word is mentioned, they say—"right, thank you." They know it directly. This affection of the mind occurs, sometimes, without any hemiplegia; and sometimes it lasts for a period, and then hemiplegia supervenes. Some have an abundance of *words*; but do not know their proper *meaning*. They distribute them about very incorrectly; so as not to express their wishes. Others have only a *few* words; and with these they endeavour to say every thing. Dr. Pritchard, in his work on Diseases of the Nervous System, (to which I have so often referred), mentions the case of a lady, who forgot the names of all persons; and of another who forgot the names of some things; and who likewise forgot that she had ever been married. Dr. Currie mentions the case of a man, who forgot the Hebrew language alone, out of several with which he was acquainted. Mr. Abernethy used to mention the case of a man who, after an injury of the head, though he knew English very well, could speak nothing but French. He had been equally acquainted with both languages; but after the injury he had sustained, he could only speak French. He also thought he was only sixteen years of age. Dr. Rush mentions the case of a lady, who forgot her English, and spoke nothing but French for a month. A French writer on hemiplegia, mentions a case of this disease, in which, after the stupor ushering it in went off, the patient recollected neither persons nor words; and when he recovered the words again, he forgot their meaning. He lost all his language;—could not utter a single word; and at last, when he could, he forgot their meaning; and he preferred Latin to his own

native language, which was German. He could read any thing, a few words at a time; and he wrote both Latin and English in elegant characters; but without knowing the meaning of a word. The end of the case was, that he died apoplectic. Some persons, however, forget only proper names. Sir Alexander Crichton mentions the case of an attorney who, in his seventieth year, married a young miss; and being very excitable, he also every evening saw his mistress; so that between both his "ribs," he must have been in a high state of excitement. Under all this, as a consequence, from the excitement of his brain, he was seized with vertigo and insensibility; and these symptoms were followed by a loss of memory; so that instead of asking for bread, he asked for his boots; and if they were brought to him, he was very angry, because he wanted something to eat; but he still kept asking for boots or shoes, instead of for bread. Instead of asking for a tumbler, he inquired for a chamber-pot; and when he wanted a chamber-pot, he asked for a tumbler or dish; and yet he was conscious he was wrong; and recognized the right words when they were spoken by others, and then pronounced them by imitation. Dr. Abercrombie mentions having seen a case, in which the same wrong word, was always used in the same wrong way. Whenever the patient missed the name of a particular object, he applied the same incorrect word, whatever it was, to the same thing. In the "Psychological Magazine," which is quoted by Sir Alexander Crichton, in his work on Disorders of the Mind, a case is mentioned where a person, after much tiresome business, on attempting to write a receipt one morning, could not write more than the two first words. He wrote on slowly, letter after letter, in the most deliberate manner. He found that he spoke words different from what he meant. He saw that he was wrong; but he could not set himself right; but instead of writing, "Received fifty dollars for half a year's rent," he wrote, "Received fifty dollars through the salvation of the Bible." This state lasted an hour or two, and then nothing of it remained. I have seen two instances of this description. The one occurred in a lady, who was not hemiplegic; but who said she had a violent pain above each eye; and as long as that lasted, she could not tell the name of any thing; but when the name was mentioned, she knew it. This continued for some hours; and then the pain went off, and she knew every thing as well as before. After a short time, a second attack occurred. She had been taking digitalis. I know an instance of a medical man, who makes a dead pause, and says,—"I cannot tell the word; I want to tell you what is the name of such a thing." It will occur every thirty or forty words. Dr. Currie (formerly of Guy's Hospital) says that he knew a person who, during an attack of this description, began his words in English, and ended them in Latin. There was a Welchman at St. Thomas's Hospital, twenty years ago, (before my time), who had forgot his native language; but while suffering from an injury of the head, he spoke nothing but Welch. When he recovered, he forgot it entirely; and talked only English. Dr. Rush mentions an in-

stance of a student who, through a fever, lost his Latin, and began learning it again; when, one day, it suddenly returned;—just as the power over paralysed parts of the body will occasionally do. He also mentions that a French Countess, during the excitement of fever, spoke the language of Lower Brittany, which she had learned when young. Dr. Abercrombie, one of the most recent writers, mentions a case in which, after fever, an individual forgot all names; and after learning the names, he was taught to read, and began his Latin; and after a little progress, he had suddenly a strong sensation in his head. He applied his hand to it; and said, that he found all he had been learning, he knew some time before. Now these things are very curious. They occur under different circumstances; but they are, no doubt, of the nature of paralysis; and very frequently they are united with it.

PARAPLEGIA.

In paraplegia (so called from παρα, *badly*, and πλησσω, *to strike*), or that form of palsy which affects one half the body *horizontally* divided, both sense and motion are generally lost. There is, very frequently, constipation and retention of urine. At last, however, the sphincter becomes paralysed; and there is neither retention of urine nor costiveness; but both fæces and urine pass involuntarily. In this form of paralysis, it is very common for the affected parts to experience spasmodic twitches and catches;—infinitely more common than where the parts are affected with hemiplegia. This occurrence is comparatively *rare* in *hemiplegia*; whereas in *paraplegia* nothing is more *common*. Very frequently, too, there is violent pain. In *hemiplegia* you *sometimes* have pain; but by no means so frequently as in *paraplegia*. The urine, in this disease, is sometimes altered in quality. It is not sufficiently acid. It is perhaps alkalescent; but when it is not, still there is a deficiency of acid; and soon after it is passed, it becomes exceedingly alkalescent. This is more particularly the case, when the paralysis has arisen from an injury to the spine.

When paraplegia does not come on suddenly, it usually commences in the lowest part,—the toes; and extends upwards. Its extent is various; but it generally reaches a little higher than the hips. It is very frequently produced by a fracture of the vertebræ; and the higher the vertebræ in which the fracture takes place, the higher is the paralysis; and the sooner does death take place,—if death do occur. Caries of the vertebræ, also, frequently produces this affection. Any disease of the spinal marrow, and many diseases of the membranes, produce paraplegia. In some instances, you will see the spinal marrow softened into a pulp, at one particular spot. Sometimes you will see it exceedingly hardened; and sometimes you will see the membranes, also, exceedingly diseased. Sometimes there is suppuration producing compression; and sometimes an effusion of serum, or an effusion of blood.

All the diseases which I mentioned as occurring in the brain, and

producing hemiplegia, and other forms of paralysis, may occur in the spinal marrow, and produce paraplegia. Sometimes a clot of blood has been found; sometimes considerable hæmorrhage, compressing the spinal marrow;—tumors of various descriptions;—exostosis of bone; as well as a mechanically altered position of the parts, diminishing the canal locally. I had a very striking case of this, a few months ago, in a boy who died of peritoneal disease. His peritoneum was filled with tubercles; and besides symptoms of mesenteric disease, he had lost the use of the lower extremities; and he died of peritonitis. The paraplegia was at once explained, by finding a scrofulous tubercle, as large as a nut, in the centre of the spinal marrow. The disease has frequently arisen from mechanical injury, when the bones appear to have sustained no violence; and in such instances I have seen recovery take place. In all probability, an effusion of blood had occurred, which was afterwards absorbed; or the parts received such a shock, as was equivalent to concussion of the brain. I can conceive that, as an affection of the brain may be induced by mere concussion, and may last for a day, or a month, or months, so a mere concussion of the spinal marrow may unfit it for its functions for a time; and the person may eventually recover;—at least, one sees patients frequently recover from paraplegia, produced by a fall or a blow upon the spine. The softening which you observe, is sometimes the result of acute or chronic inflammation; and sometimes it is not the result of inflammation at all; but of a morbid change not well understood.

But besides all these causes of paraplegia in the spinal marrow, there can be no doubt that the disease arises, sometimes, from an affection of the head; because, occasionally, you will find no uneasiness whatever in the spinal marrow; but you find great symptoms in the head; such as giddiness and drowsiness. Dr. Baillie wrote a paper in the "Transactions of the College of Physicians," to show that, in the greater number of cases of paraplegia occuring in adults, the cause was situated in the head. However, he did not prove the point at all. He gave but one dissection; and that was not seen by himself. Whoever reflects on all the cases which he has seen of this kind, will find that, in the greater number of instances, the cause was evidently situated in the spinal marrow. He will arrive at this conclusion, from the cause having been applied to that part; from the uneasiness being felt there; or from the morbid appearances presented there on dissection; but occasionally there can be no question, that the disease arises from an affection of the head. I have this moment come from seeing a case of this description. The gentleman was a little poorly, and confined to his bed; but he had no great ailment. It was discovered, one day, that he had lost the use of his lower extremities; though no cause whatever could be assigned for it. He could not stand on his lower extremities. His water had not passed; nor his fæces. No violence had been applied to the spine, or to any other part that he was aware of; and he bore striking all down the spine. Pressure of the most violent kind gave

him no pain. He told me, however, that he had had symptoms of giddiness a day or two after he was first seized; and delirium came on. The cause in this case was evidently situated in the head; but I am satisfied that for one case where you will find the cause of paraplegia situated in the head, you will see eight, or ten, or perhaps a dozen, where it is situated in the spinal marrow.

Sometimes, after paraplegia, nothing is to be found;—exactly as is the case after apoplexy and hemiplegia. In the two latter diseases, I stated that frequently nothing was to be found in the brain; and in the former, occasionally, nothing is to be found in the spinal marrow. The reason why you have spasms, twitchings, and considerable pain in this disease, is that it is so frequently produced by a certain degree of inflammation of the spinal marrow;—an inflammation that softens it; or by something pressing on the spinal marrow, or at any rate producing great irritability. The cause which compresses the spinal marrow, also irritates it at the same time; and the irritation produces such an affection of the roots of the nerves, that a sense of pain is felt; and if it be a nerve of motion, a spasm occurs. When the part is found compressed by a bone, and this compression is only partially established, then you have considerable twitchings. Paraplegia sometimes arises from cold. Not long ago, I had under my care a man, who had lost the use of his lower extremities from working in cold water in a ditch;—digging the foundation of a wall, or something of that description. He was continually hard at work in damp, cold places. You rarely see *hemiplegia* produced in this way; the reason of which is evident. Cold is continually applied to the *lower* extremities *horizontally*, but it is very seldom indeed applied to the *upper* extremities *vertically*. The lower extremities are frequently in water, while the upper are not.

I will now consider the treatment of paralysis in general; or, at least, the treatment of hemiplegia and paraplegia. If there be a local cause evident and removable, our first plan is to attempt its removal. Suppose the cause be a fracture of the bones of the cranium, of course surgical means should be immediately adopted, for removing such a source of irritation. If there be suppuration from a carious bone, or injury of a bone, of course measures should be taken (so far as is right, according to the best surgical discoveries) for letting out the pus. I have seen pus let out by trephining the head, and opening the dura-mater; but success, in such a case, must be very doubtful. The removal of a portion of fractured, or carious bone, is always to be attended to, when such serious effects take place as paralysis. If the cause be any thing taken into the stomach, we should endeavour to remove it.

Suppose the disease appear to be of an inflammatory nature;—suppose the head be hot, and there be violent pain there; together with delirium, and things of that description; then, of course, common antiphlogistic treatment should be put in practice; such as bleeding, purging, leeching, mercurializing as quickly as possible, applying cold, and starving the patient. This is the proper

treatment of a number of cases of paralysis. In the first instance, you must treat the complaint according to the symptoms of congestion or fulness; but (as in the case of apoplexy) you must be on your guard not to go too far; for if you do not attend carefully to the patient's pulse, every time you visit him, and do not visit him frequently, you may be surprised some day to find the pulse low, and the patient sunk irrecoverably. It is possible that paralysis may remain long after the inflammation is over; when the *effects* of inflammation only continue; when there is mere effusion left, or suppuration; or when the brain is softened, and there is no inflammation or congestion. At any rate all the patient's strength is gone; so that you would not be justified in severe measures, even if inflammation or congestion did exist. Great care is necessary, in this disease, not to push matters too far; and when there appears no danger of life, but the disease still continues, we have, in general, to carry on a certain degree of antiphlogistic treatment;—to make the patient abstain from wine, and from distilled liquors, and frequently from animal food. But you must not starve the patient too much; nor bring him too low in this chronic treatment. Mercury is very useful at first; but after a time, it would only impair the powers of the patient; and when you have given it a fair trial, it is a pity to have recourse to it again. Iodine has been strongly recommended, and will act as well as mercury; but it is only proper when rubbed in, in the form of ointment; and given internally, in combination with potassa. It is said to do good; and I have occasionally seen it useful; but when you consider that the disease may arise from so many different causes, you cannot expect any one thing to be of general use. The plan most generally useful, is antiphlogistic treatment; because it removes congestion and inflammation; and prevents the parts from being pressed upon, by an excessive quantity of blood. If any thing by chance supervene, that ought to be absorbed, antiphlogistic treatment will cause absorption, better than any thing else; and should there be some morbid growth, this may also be diminished by antiphlogistic treatment. Local means, and counter irritation near the part affected, are very proper;—that is to say, counter irritation in the nape of the neck, where the *head* is affected; and down the *spine*, where the cause is situated there; as in paraplegia. But while you are doing these things, it is often very necessary (although you would not give *wine*) to give good food; and occasionally even tonics; and, after a time, they are often to be given rather freely.

If there be great debility, you must not be afraid of giving wine. Patients will sink without it; and it will do no harm. To lessen the twitches and violent pain, opium is sometimes proper. If you attend to keeping the bowels open, and restrict the patiant from improper stimuli, you may give opium; for it is a great advantage to lessen the pain and spasms. I have often done it; and I cannot say that I ever saw it do any harm; but, of course, I have always given it very cautiously. Though I am not habitually fearful with respect

to medicine, when I know my way, and know what the medicine is, yet I am, at the same time, very careful in watching the effect of every dose; that I may stop before any harm takes place. There is no occasion to be *rash*, because you are *bold*. Where there are no signs of inflammation left, and the patient is languid,—when you can have no reason to fear inflammation or excitement, then stimulants may be given. On this account, strychnine has been particularly recommended; for although it is a narcotic, that will destroy life, it is a powerful stimulant to the nervous system. It will cause parts to twitch; and while it stimulates the nerves of *sensation*, and the central parts of the nervous system connected with them, it at the same time stimulates those of *motion*; producing spasm, twitching, and a tingling sensation. You must however see, *à priori*, that it cannot be of universal, or even general use. If a part of the nervous system be softened, and disease is induced by it, how can you expect strychnine, or all the stimulants in the world, to cure the disease? You cannot, by such means, make a *soft* part *hard*. You may stimulate the part for a time; and make the most of it, by exciting it violently for a time; but that will not cure the disease. If the disease arise from pressure, how can any stimulant whatever remove it? It cannot have the effect of removing an exostosis, or a tumor. I cannot say that I ever saw a case cured by it, unless the disease arose from mere torpor. Where it arises from cold, then you may suppose, beforehand, that stimuli will do good; and I think I have seen strychnine serviceable in such cases. In common cases of paralysis, arising (as they often do) from disease of the brain, where the parts have been softened in consequence, you might give strychnine till the patient jumped out of bed; but it would only be to lie on the floor. I have given it freely; but I am not satisfied with it. Nux vomica, camphor, cayenne pepper, musk, and ammonia, have been had recourse to; and have failed. Electricity and galvanism, I should say, stand upon the same level, in point of utility, with strychnine and other stimulants. They may do good if the disease arise from mere torpor; but if it arise from an organic cause, or from compression, or obstruction, or alteration of structure, you cannot suppose that they will do good, according to the extravagant idea which some persons have formed of them. There can be no doubt of the occasional efficacy of strychnine; but if you look at the pathological state of the disease, you must perceive how futile it must often be.

Paralysis will sometimes cease spontaneously when the cause is in the brain. If it arise from effusion, the effusion may be absorbed; and by proper treatment you may expedite the absorption; but after a time, if you do nothing, it will be absorbed;—just as congestion will cease after a time. A clot of blood may be absorbed; and whatever had been used,—whether electricity or strychnine,—of course it would have the credit of it; but if you try a series of cases, and treat them with one particular remedy, you will see that every one must fail, in a great number of instances. After all, the anti-

phlogistic treatment is evidently more successful than any other; only it is necessary to remember that, after a time, it must not be pushed too far.

LOCAL PALSIES.

I now proceed to more limited palsies than the foregoing;—to what are called "*local* palsies." The most common local palsies affect the four organs of sense;—the eyes, the ears, the nose, and the tongue; the side of the face as to motion only; the upper eyelid as to motion only; a leg or an arm as to sense or motion; and the hands as to motion only. The cause of these local palsies is more frequently situated in the course of the nerves, after they have quitted the cerebral mass, or at the ends, than any where else. If the cause of palsy be in the brain itself, or in the spinal marrow, then you generally have more than local palsy. You have either hemiplegia or paraplegia; but if the nerves be affected in their course after leaving the brain, or only at their extremities, than you generally have local palsy.

AMAUROSIS.

The first of these of which I will speak, is one of those affecting an organ of sense. It affects the optical nerves; and is called *amaurosis* (from *αμαυροω*, *to darken*).

In this affection (which is also denominated *gutta serena*) there is dimness or loss of sight, without any fault of the humours, or the capsules, or the cornea, or the conjunctiva. Frequently, on looking into the eye, you see that, at the bottom, it is lighter coloured than it should be; or that it is rather greenish. On observing the pupil, you notice that the iris is sluggish or immoveable; and generally it is dilated. Sometimes, however, it is contracted;—the pupil is exceedingly small; and when that is the case, the palsy of the optic nerve irritates the third pair of nerves; and that causes the iris to fall into this condition. Indeed, from an affection of the third pair, you will sometimes see the iris motionless;—not obedient to the light. The cause of this disease is in the expansion of the optic nerve (the retina), or in the course of the nerve itself; perhaps at the very origin (or termination),—the corpora quadrigemina. Sometimes it arises from *softness* of the nerve; sometimes from extreme *induration*; sometimes from tumors pressing upon it. I knew a young lady who was amaurotic, from seven years of age till the time she died; which was between twenty and thirty. A tumor was found pressing on the optic nerve. Disease of the corpora quadrigemina frequently produces this affection; and so also does disease of the thalami nervorum opticorum. You continually see the latter softened, however, without any affection of the eyes.

In this disease, there is very frequently headache, vertigo, and evident signs of cerebral congestion; but a very curious point in this disease is, that it will sometimes arise from an injury of another nerve than the optic. It has been known to arise from a wound of

the supra-orbital nerve, and various nerves of the face. You will find many cases on record, where amaurosis arose from an injury of some other nerve. In Mr. Wardrop's book on the Morbid Anatomy of the Eye, you will see several cases.* It there appears, that where the nerves of the face (the supra-orbital, for example) have been only half divided, the complete division of the nerve has restored the sight; so that *imperfect* division *produced* amaurosis, and *complete* division *cured* it. It once happened to me to see an instance of this description. In 1815, a woman aged twenty-seven came to me, who could only see one portion of objects. In her it had arisen from arteriotomy in the temple. There could be no doubt that, in performing the operation, a twig of the nerve was injured; and, from that moment, she partially lost the sight of the corresponding eye.

This is a very curious circumstance;—one with which I was not acquainted when I began practice; and one with which many persons, I believe, are still unacquainted. It is very singular that an injury, or division, of a nerve of sense or motion of the face, should give rise to paralysis of the optic nerve. I presume it is from sympathy. Diseases will frequently arise from sympathy of the head with the stomach; and so I believe that, in this case, the circumstance arises from sympathy; and not from any connexion of function between the parts.

NYCTALOPIA.

Amaurosis is singular in another respect. It is very frequently a *temporary* or *periodical* paralysis. Some persons become amaurotic at night, though they can see well during the day; and this is called *night-blindness*, or *hemeralopia*, (from ημερα, *day*; and ωψ, *the eye*); or *nyctalopia*, (from νοξ, *night*; and ωψ, *the eye*). It is common in hot climates; and especially occurs in new-comers. It is said to be produced there, in that particular instance, from the great glare of the sun;—just as sheep are sometimes amaurotic in the spring, from being exposed to the glare of snow during winter; for it is observed that, in some mountainous parts, the sheep do not see till the commencement of summer;—till the snow has disappeared for some time. None of us can see at first, when we enter from the light into a dark room; and that is the same occurrence, on a small scale, which takes place in sheep that have been exposed to the glare of the snow. This has been observed, by some persons, to take place on board a ship. It has been noticed on the sea-coast, in the West Indies, in negroes, and in sailors near the equator. It is described by Mr. Bampfield, who wrote on Dysentery, as very common; and Sir Gilbert Blane mentions having seen it, in connexion with scurvy. In general, it will yield with the other symptoms of scurvy; and when it will not, Mr. Bampfield says that, in all cases, it yielded to blisters applied to the temples.

* "Essay on the Morbid Anatomy of the Human Eye; by James Wardrop, M.D."

Dr. Heberden mentions an instance of night-blindness, in a person who never had it except on board ship. On the other hand, *day*-blindness is mentioned, by various writers, as occasioned by a dilated pupil, and occurring in Italian peasants. Regularly, at sun-set, persons in this situation become either perfectly blind, or very nearly so;—the light which occurs then not being sufficient for them. I had a case of this kind in a woman, who had been suckling four months; she said that she had always dimness of sight at five o'clock in the afternoon. This was in the neighbourhood of London. After lying down and putting out the light, she gradually saw more clearly as the night proceeded; but when midnight arrived it became duller; and remained so till nine the next morning. She had nausea in the morning. I never saw her again. This woman was suckling; which might be too much for her. At five o'clock her sight began to be impaired; and she went to bed early. She had what is called *ptosis*;—a dropping of the upper eye-lid (from πτοω, *to fall*).

DYSECÆA.

The hearing is often lost; but more frequently from other causes than paralysis. The affection is called dysecæa (from δυς, *difficulty*, and ακοη, *hearing*). Smell and taste are more rarely affected; but it is not uncommon for smell, hearing, and taste to be paralysed, when there is paralysis of another kind. Sometimes in *hemiplegia*, sometimes in *paraplegia*, you see a person lose smell and taste, or smell and hearing. It is rare that smell and taste are paralysed; except in conjunction with other kinds of paralysis. When there is cerebral disease, you will see several kinds of paralysis; as well as epilepsy, and other nervous diseases.

ANÆSTHESIA.

Paralysis of the sense of touch, which is called *anæsthesia* (from α privative, and αισθαινομαι, *to feel*), is also very rare. It is common enough for persons to lose *sensation* and *motion* in hemiplegia; but to lose the sense of *feeling only* is very rare. You will find a case which arose from cold, described in the third volume of the "Medico-Chirurgical Transactions," I believe, by Dr. Bostock. It affected the surface, and indeed the substance of the hands. If needles and pins were passed into the flesh, the patient could not feel them. The surface and substance of the hands were paralysed, as high as the wrist; and not only could not needles be felt if moved about, but electric sparks and shocks gave not the least sensation. Paralysis also took place in the lower extremities; and extended half way up the legs; yet, in all other respects, the person was in perfect health. A blister was applied, and produced its usual effects;—some degree of vesication; and pressure on the ulnar nerve gave its peculiar tingling only about half way down the arm;—no farther than the parts were not paralysed. This came on from sleeping with the window open, after a hot day. You will find a

case, in the fourth volume of the "American Repository," where the hands and feet were affected in the same way. The man was looking another way, and cut off his thumb without knowing it; and when he looked at his hand again, it was gone. This man frequently met with accidents, from treading on things which he ought to have avoided. He had burns, wounds, and so on, in his hands and feet. He continued in this state for two years. There is an instance mentioned by Laennec, in his second volume, where the right arm was broken; but the patient knew nothing about it, till he found he could not use it as before. All these persons were in the middle period of life, between forty and sixty years of age. I have never seen an instance of it.

PARALYSIS OF THE FACE.

The most common partial paralysis, which affects motion only, is that of the face; and this chiefly arises from an affection of the portio dura. When this partial paralysis occurs, you cannot mistake it for a moment. The face is drawn to the opposite side; the eye of the affected side is unclosed; the patient cannot close it; and it remains wide open while the other is shut. The consequence of this is, that the tears are not directed towards the inner canthus of the eye; and they fall over on to the cheek. There is an inability to laugh; so that if the patient attempt it, he laughs "on the wrong side of the mouth." If you give him a looking-glass, and make him laugh, he sees what a figure he is; and avoids it in future. There is an inability to distend the cheek; and an inability to whistle or frown. If you tell him to frown, he frowns with only one corrugator supercilii; and as to whistling, he makes all sorts of noises out of the other corner of the mouth. Sensation is, in this case, unimpaired. The portio dura (you are aware) is a nerve of *motion*, and not of *sensation*; and therefore motion only is paralysed.

Some have thoughtlessly proposed to divide the other part of the portio dura, in order to paralyse the other muscle. This would do very well if it were antagonised; but unfortunately the orbicularis palpebrarum is a distinct muscle,—standing "on its own bottom;" and therefore the effect of cutting it would be, to prevent the patient from shutting either eye. It would prevent the affected muscles from being drawn to the healthy side, but both eyes would remain staring wide open; and hereafter the patient would be unable to make use of the muscles at all. He could neither whistle nor laugh.

This affection generally arises from cold; but not always. Very often you find a person deaf at the same time; and he has a discharge from the ear. This you may conceive, from the situation of the portio dura; indeed, it often occurs in person who have been exceedingly deaf. Sometimes it arises from caries of the bones; and sometimes it has appeared to arise from an enlargement of the gland behind the ear, compressing the nerve. Sometimes this paralysis is evanescent; and if you give the patient a stimulating liniment, it soon disappears. It will disappear spontaneously; but

I dare say it disappears much sooner on stimulating the part. Occasionally, however, you find it tedious and incurable. I have seen cases in which it has been much improved; but I hardly recollect a case where the cure was quite perfect. It would be very wrong for you to suppose (as has been intimated too much) that this is a sort of paralysis which has no connexion with an affection of the head. It *may* have no connexion, because it may be external to the brain, —external to the foramen ovale; but in many cases, if you examine minutely, you will find patients complain of fulness of the head, of giddiness, of sleepiness, and other symptoms; which clearly shew that there is an affection of the head, as well as this of the nerves. The nerve, no doubt, may be compressed within the head itself. The portio dura may suffer compression, and become softened within the head, as well as in the bones of the cranium, and after it has left those bones. It is not by any means a trifling complaint; and one of which there is no fear that it will be connected with other serious affections; because very often it *is* connected with a more serious affection.

The proper mode of treatment would be, to ascertain how far there is an internal affection or not. If you find symptoms of drowsiness, you must treat these the same as in other cases; but if you find nothing of that description, still there may be a propriety in applying leeches over the portio dura, about the mastoid process;— rubbing in mercury and iodine; stimulating the parts well; and applying blisters. I have done all this, and with a certain degree of success; but (as I just now said) I hardly recollect a case which, after continuing some time, was perfectly cured. Repeated leeches, blisters, mercury, stimulating applications, and frictions, I believe, are the best things you can employ.

It sometimes happens that the nerve of *sensation* of the face is affected. The portio dura is a nerve only of *motion*; but there is another nerve (you are aware) which gives *sensation*; and not only to the face, but, as it would appear, to the nose and the other organs of sensation in the head. Paralysis, in this case, is much more rare than in the other. You will find an instance of this kind very accurately described, in the "Medical Gazette," for February 14, 1829. There the *fifth* pair of nerves was diseased within the head; and the consequence of this was, that the eye remained open, and the muscles were drawn to the other side. The effect was, that the pupil was dilated, and the iris immoveable; but yet the patient could see. He could not move his eye, except in the way of abduction. When the portio dura is affected, the person can move his eye as before; he cannot *close* his eye, but he can *move* the ball as before; but in this case there is a loss of motion of the eye, except so far as regards abduction. The abductor will exercise its power as well as before; so that the patient will constantly squint outwards. There was likewise a dropping of the eye-lid;—there was what is called *ptosis*; and a loss of sensation in the face, and even in the eye. In an affection of the portio dura, the patient *feels* as

before; but as, in this case, there was disease of the *fifth* pair, there was no sensation in the face. It might be pinched and scorched, the eye might be rubbed, and the internal part of the nose might have substances introduced; but yet no sensation was experienced. There was, however, no distortion of the face;—no want of power over the muscles of the face; which clearly shewed the distinct uses of the portio dura, and of the fifth pair. I must mention, however, that the temporalis and masseter muscles were paralysed; because the fifth pair is not altogether a nerve of *sensation*; there are branches in it of *motion* likewise. This particular case arose from mechanical injury.

You are aware that, if this particular nerve be divided intentionally (which may be done by practice and dexterity) within the cranium, the external parts which it supplies lose their sensation; and that, after a time, the eye becomes muddy, and the cornea opake. This result both myself and many others have witnessed. I saw it when the experiments were made by Magendie, in this country. Respecting the treatment of a case of this kind, it can only be conducted on the general treatment of paralysis;—exactly as is the case in disease of the portio dura.

The diseases of the nerves which give rise to this partial paralysis, are precisely the same, though different in *situation*, as those which give rise to hemiplegia and paraplegia. In some instances it is entirely mechanical compression. You may have *hemiplegia* from the compression caused by a tumor on the *brain*; *paraplegia* from the compression caused by a tumor in the *spinal canal*; or the pressure of a bone that is fractured; and so you may have amaurosis (which is a partial paralysis) from the pressure of a tumor on the optic nerve. Any cause that will produce paraplegia or hemiplegia, will produce local paralysis when differently situated. Occasionally you have this local paralysis from local inflammation of a particular nerve; and the inflammation may be of so intense a character, as to be seen after death; and, indeed, you may see ecchymoses. Sometimes there is softening of a particular nerve,—even ulceration of it; and a decided effusion into the sheath of a nerve. These, you will recollect, are precisely the same things that I mentioned, as causes of hemiplegia and paraplegia. Tumors have frequently been found resting on particular nerves; and when there are these circumstances of inflammation, softening, ulceration, and tumors, there is often besides paralysis, violent pain, and spasmodic convulsive action of the muscles which these nerves supply.

PARALYSIS OF THE EXTREMITIES.

You will find some interesting and curious cases of partial paralysis of sense and motion, which occurred rather suddenly, and in only one extremity. It is well to know these cases. I have never seen one; but they occur from time to time. The extremity has been the arm, in almost every case. It has become suddenly cold, motionless, and senseless; and it has then mortified. This has not

been from inflammation; but becoming paralytic first, the limb has presently mortified; so that frequently the whole case has not lasted more than a few days. One of the earliest instances with which I am acquainted, is mentioned by Dr. Wells, in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge;"—a work which only consists of a few volumes; but which contains papers of the highest importance by Dr. Baillie, John Hunter, and others. In that case it took place in the left arm; but the arm was not examined. Another case occurred in the *right* arm; and was followed by death in a few hours. It was observed, before death, that the arm was only pale; and it is said that nothing was seen at the autopsy. There is another case mentioned, where both the arm and leg, in hemiplegia, lost the pulse entirely; and there death took place in five days. But you will find that the nature of such cases has now been pretty well cleared up. It appears that some have taken place after external violence. The external violence has lacerated the inner coat of the artery; and an effusion of lymph has blocked up the vessel, so that the part has been deprived, almost immediately, of all blood; and the consequence of it, in the first place, was a loss of sensation and motion, and afterwards mortification. In the "Edinburgh Medico-Chirurgical Transactions," Volume iii, Part i, there is a paper well worth reading, communicated by Mr. Turner, a surgeon; who found a laceration of the internal coats, and complete obstruction. In other cases there appears to have been no external violence; but the artery has been previously diseased, and has suddenly given way in the inner coat; so that inflammation has been set up, lymph effused, and obstruction produced in that way. Occasionally the obstruction takes place from an accumulation of pus. These cases were mysterious before the arteries were examined.

These, I believe, are almost the only cases of partial paralysis, in which the pulse is lost in the paralysed part. In most paralysed limbs, it is weaker than in other parts of the body; but where it ceases altogether, it arises from a disease of the artery; such as I have now mentioned. Respecting these diseases of the nerves, I may state that there is a case mentioned by Magendie, of disease of the fifth pair of nerves, producing such symptoms as I have stated; and, after death, the fifth pair was found swollen, with a greyish yellow coloured matter.

TUMORS IN THE BRAIN.

I have spoken sufficiently, when adverting to inflammation of the nervous system, of softening, suppuration, effusion, and all those things. I mentioned that when pus was formed, it might be found in a cyst, or it might be diffused; that sometimes the surrounding part is in a state of irritation; sometimes it is perfectly healthy; and sometimes, by the presence of pus, the surrounding parts become diseased. But besides this, we frequently have tumors of a scro-

fulous nature, in the brain and nerves. These are by far most frequent in infancy; but they are not so often found in very young infants, as in those a little older. They are so much more frequent in infants than adults, that even in phthisical adults you seldom see them. They are most usually observed in the hemispheres of the brain; and they are found more frequently in the cervical, that in other portions of the spinal marrow. You may recollect I mentioned a case of paralysis of the lower extremities, in which a scrofulous tumor was found in the cervical region of the spinal marrow. It is a constant observation, that scrofulous tumors of this kind, are found more frequently in that situation, than in any other. They frequently appear to have originated in the pia mater, both in the head and spinal marrow. The pia mater corresponds with the cellular membrane in other parts of the body. They are not numerous in the nervous system; for it is common to find but one. You see them, like the tubercles of other parts, of all sizes; and they agree with them in another respect;—that is, they are sometimes inclosed in a cyst, and sometimes they have none. I have seen many preparations exhibiting a large mass of scrofulous deposit in the cerebellum. There was a man in Bethlehem Hospital, who was an idiot, and laboured under St. Vitus's dance. He was also addicted to the vice of masturbation; and in his brain there was this appearance;—a scrofulous deposition in the cerebellum.

The symptoms of a scrofulous tumor will be inflammation, paralysis, and convulsions. It can make no difference what the substance deposited is. If it produce irritation, you may have convulsions of various kinds;—epilepsy, St. Vitus's dance, and so on;—any convulsions, or spasmodic diseases; and any sort of paralytic affection; together with pain in the head, delirium, and symptoms indicating inflammation. We sometimes find *scirrhous* tumors in the head; and they are sometimes enormously large, so as to occupy the greater part of the hemisphere. They have also been seen to occupy the entire cerebellum. Sometimes, in the membranes, they are seen of an exceedingly hard character;—sometimes there is a cartilaginous, or fibro-cartilaginous change. You may recollect I mentioned that this transformation proceeds even to the formation of bone; so that bony tumors are found within the head, within the brain, and upon the membranes; and there are likewise bony tumors in the cerebellum. You know that it is common to find plates of bone along the longitudinal sinus; and sometimes a spicula of bone (an exostosis) has been seen. The symptoms of all these tumors are the same.

Occasionally you have *encephaloid* tumors in the brain. You have that deposition of new matter, which is not seen in the healthy body; and which being *like* brain, though different in its nature, has been called *encephaloid* (from εν, *in*; and κεφαλη, *the head*). Very frequently, hæmorrhage takes place from it, so that it become a bloody tumor; and used to be called *fungus hæmatodes*. This most frequently occurs in young subjects. It was supposed to be the cancer of young subjects. It is called by Dr. Hooper *hæmatoma* (from αιμα,

blood). If you cut into it, it is like the brain,—soft and white; and in some parts it is red.

Sometimes, when there are tumors in the brain, you may have that black deposit, which I mentioned as being called *melanosis*. This is an innocent thing;—not a malignant disease; and does no harm except mechanically by its bulk; but it frequently co-exists with scirrhus and with encephaloid disease. Scirrhous tumors, (that is to say, fibrous formations, transformations, and ossifications) are found much more frequently in the membranes, than in the brain itself; but encephaloid, melanotic, and scrofulous deposits, are found most frequently in the brain. Encysted tumors, of all kinds, are found in the head, and in the spinal canal. Sometimes these common encysted tumors, or serous cysts (called hydatids in common medical language, though they are not so) are found in the plexus choroides; and they are just the same on either side. You frequently see small cysts in the membranes, as well as in the plexus choroides; and sometimes they are found in the substance of the brain itself. Dr. Hooper has given some very admirable representations of these. Besides these encysted tumors, real hydatids are occasionally found, both in the substance of the brain, and in the spinal marrow; and on the exterior of these parasitical animals you occasionally find an appendage, approaching to a tail. These are also frequently found in the brute creation. The contents of the serous cysts (not hydatids) are very various. Like the contents of serous cysts in other parts of the body, they are sometimes clear liquid, sometimes soft pultaceous substance, and sometimes blood.

No one can tell beforehand, the existence of any of these things. You see some of the diseases present, of which I formerly spoke. You see delirium, or convulsions, or paralysis, or pains in the head; sensations of coldness and of heat;—all sorts of uneasy sensations; and you suspect, from the continuance of these, that there must be organic disease. When you find paralysis, you suppose that organic disease is coming on; but it is almost impossible to say what it is. If you see organic disease in another part of the body, (fungus hæmatodes in the extremities, for instance), and the patient then becomes paralytic, and has convulsions,—you may suppose that the same disease which has taken place externally, is coming on in the head; but the symptoms will only enable you to say, that you *presume* there is organic disease. All these things (schirrus, encephaloid matter, melanosis, and scrofulous formations) which occur in the head and in the spinal canal, are also frequently found in the distant nerves; where they cause only *partial* palsy.

HYPERTROPHY OF THE NERVES.

Besides these tumors, the nerves are subject to the disease called *hypertrophy* (from υπερ, *in excess*; and τρεφω, *to nourish*); which I formerly spoke of as existing in the brain, and giving a tendency to apoplexy and paralysis. You know that, after amputation, the ends of the nerves will become hypertrophied;—sometimes much

enlarged, and exceedingly sensible and painful; and they have been seen hypertrophied in fungous ulceration. Sometimes you will see a partial enlargement, like a pea;—a large hypertrophy here and there, in particular nerves; and these have been seen when the brain and spinal marrow have shewed none at all. These hypertrophied portions of a nerve, sometimes give rise to great pain; and sometimes they become exceedingly hard;—indeed, they become hard *tumors*; which, perhaps, ought not to be called hypertrophy. Sometimes they are so exceedingly painful that, when they are touched, the person has an electric feeling along the course of the nerve, below the part.

ATROPHY OF THE NERVES.

Cysts are found in the nerves, and occasionally ossification; and nerves, like the brain, will sometimes waste away. I shall speak particularly of atrophy (so called from *a*, *privative*, and *τρεφω*, *to nourish*) of the *brain*, when I come to speak of insanity and idiocy; but I shall have no other opportunity of speaking of atrophy of the *nerves*. If they be pressed upon they will waste away;—the same as other parts. If the nerves of the eye waste away, the cornea will frequently become opaque.

You see, therefore, that the brain, the spinal marrow, and the nerves, are all subject to precisely the same organic diseases. They are all subject to inflammation, and the common effects of inflammation; and to the same description of organic diseases; whether of a malignant nature or not.

MALFORMATIONS OF THE NERVOUS SYSTEM.

Having spoken of the diseases found in various parts of the nervous system, I now proceed to speak of those original aberrations of formation which are occasionally discovered. You are, of course, aware that the nervous system is more complicated in the series of animals, as we rise from those which display the least mental functions, till we arrive at man, who displays the very highest intellectual faculties. So, accordingly, the lower the animal is, the smaller is the brain; and in the very lowest we have nothing that corresponds to brain; but where there is mind, there must be something to direct the functions;—to experience sensation, there must be an organ. Accordingly, you will find it universally allowed, that the nervous system receives additions, in proportion as we ascend in the scale of being. I will read you an extract from the "Edinburgh Review," which was disposed to laugh at this as nonsense. It said that all heads were the same shape, and the same size; but you will find the following paragraph in the ninety-fourth number:—"As we ascend in the scale, the animal acquires increased sense, power, or instinct. Its nerves multiply; its brain becomes improved in structure, and (with reference to the spinal marrow and nerves) augmented in volume, more and more, until we reach the human brain;—each addition being marked by some addition or amplification of the powers

of the animal; until, in man, we behold it possessing some parts of which animals are destitute, and wanting none which theirs possess. So that we are enabled to associate every faculty which gives superiority, with some addition to the nervous mass; even from the smallest indications of sensation and will, up to the highest degree of sensibility, judgment, and expression." You may therefore suppose, that if certain parts of the brain be deficient, the mind will, in a correspondent manner, be defective; and this, accordingly, is the case. I will first enumerate, as morbid anatomists do, the deficiencies which are found in the brain;—not referring at all to phrenology; but taking up the subject as it is treated by morbid anatomists.

In the first place it is found, in the higher beings who have a deficiency of the cerebral mass in any respect, that the convolutions are too small, or that there are too few of them on one or both sides. You are of course aware, that the convolutions give a great extent of surface to the brain; just as the valvulæ conniventes of the intestines give an increase of surface to the interior of that canal; so that if there be fewer convolutions than usual, there must be so much less external part of the brain. Thus you find occasionally, in human beings, that there are too few convolutions on one or both sides; or you find them too small. Occasionally, one or two convolutions, usually found, have been entirely absent.

Secondly, all the upper parts of the hemispheres, down to the vault of the ventricles, have been found to be absent; so that the ventricles lie entirely open, or are only covered by a serous membrane;—that is to say, in all probability, by the arachnoid coat which lines them. Sometimes one lobe of the brain has been absolutely wanting; and sometimes one has been only too small.

Thirdly, the thalami nervorum opticorum, and the corpora striata, on one side or both, have been found too small, or have been absolutely wanting; or their place has been supplied by a cyst; though sometimes it has not. A deficiency is sometimes seen in the grey substance of the brain; and sometimes in the *white* substance. If the hemispheres be wanting, there is nothing beyond the crura cerebri, except a few scattered fibres; such as are seen in the fœtus before the hemispheres are formed; and, indeed, there are then no central white parts.

Fourthly, the central white parts are found, sometimes, in a state of deficient development. Occasionally the corpus callosum is a mere membrane; and it has been found absolutely wanting, in an idiot thirty years of age. In some brutes (for instance, birds and reptiles) the same is observed naturally. There is no corpus callosum, nor any fornix; and therefore such a brain as we have mentioned, resembles the brain of some brutes.

When there is this smallness of these parts, other parts are not naturally so developed in man as they are in brutes. They appear larger in such a human being, but it is merely by comparison; and it is found that the parts are larger in brutes. They appear larger, if the other parts be wanting; but it is merely a deception. You

never find the tubercula quadrigemina a hollow tube, as in birds;—you never find the fourth ventricle so large as in some brutes. The middle lobes of the cerebrum, though naturally smaller in brutes than in man, are in this case just as large as those in man.

The cerebellum is sometimes deficient. It may be small, or the medullary centre may be small, or the lobes may be small;—they have been seen to be a mere sac. This is observed in some brutes; and sometimes in the human embryo. The reason of this extraordinary formation is, that development has ceased, in most instances, at a certain period. You know that the brain, in the human body, is different at first from what it is at last; and occasionally the development of it stops; and as the adult person grows up, you see that it is totally different from what it is in other beings. When this is the case, the cerebellum is so defective as to be a mere sac; the tuberculum annulare is wanting, though the middle lobe of the brain is present; because the tuberculum annulare is found to be in proportion to the size of the cerebellum. You find, where there is no cerebellum, still the corpora quadragemina may exist; because they have no relation to the cerebellum, but to the spinal marrow. As to the pineal gland, you find that in all formations of the brain.

The cerebrum and cerebellum may be absent, although there is the spinal marrow, and the medulla oblongata; but if there be no spinal marrow, it is found that there is neither cerebrum, nor cerebellum, nor medulla oblongata. As to the spinal marrow itself, it may be entirely absent, and sometimes it is found divided; and it is said that when it is divided into two, the brain is always absent. Sometimes it is only channelled down the centre; and when this is the case, there are frequently other malformations;—such as a want of brain, or a want of bone in the spine. When there is a channel, it is found to arise from the want of the cortical substance of the spinal marrow; and the channel seems continued all the way up to the fourth ventricle. The division, or the channel, may be large or small; and it may not run the whole extent. The channel itself is found at all ages. Two instances of maniacs are recorded, in one of which two central canals were observed in the spinal marrow; and in another only one. Many brutes have this central canal. Sometimes the spinal marrow is not wanting, but is very small; and sometimes the smallness is local;—occurring only at one spot; just as smallness occurs, sometimes, only in one part of the brain.

It does not follow that the nerves should correspond to this deficiency. There may be a deficiency of the nerves, when the brain is wanting; and a deficiency, too, when the *spinal marrow* is wanting; but occasionally the nerves are found perfect, although the brain and spinal marrow are found wanting. There they are, ready for action; but they want the brain and spinal marrow to put them in motion. When there is this deficiency in the nervous system, the corresponding parts of the body are sometimes small, and likewise atrophied; yet occasionally the body is perfectly sound,—in all other respects well developed,—even where this deficiency of the nervous

system exists; except that the *heart* is never found where there is no *head*. Serres says that *he* has found a heart where there was no head; but nobody else ever did.

Where there is no head, I believe the *lungs* are never found; but notwithstanding there may be no head, there is always some rudiment of the *alimentary canal*; and for this simple reason;—it is formed first.

The causes of all these wants (smallnesses, and deficiencies) in the nervous system are, first, original defective power; the parts are not developed, through some deficiency in the formative power, independently of all external circumstances. There is a want of power in particular rudiments of the embryo, to develop the various parts. Secondly, they are wanting (I believe) through some previous irritation. They have existed; but some irritation has also existed, which has wasted them, or arrested their progress. Thirdly, pressure (we know) will cause atrophy in future life; and so it will occasionally prevent the development of parts in the fœtus.

Now if the brain be the organ of mind, which I suppose no one will doubt at the present day, it stands to reason that this deficient devolopment must be attended, in some way or other, by a correspondent deficiency in the mind. If the brain be altogether wanting, there can be no mind at all; and, accordingly, you will continually find fœtuses formed without any head; and, of course, they cannot live, so as to have a chance of manifesting mind. But you will see some born, and living some days, who have merely a little brain (if we may call it brain at all) about the tuberculum annulare; and they will cry, and suck, but they will do no more; and presently they die. You will see others (who have just sufficient brain to eat and drink, breathe and grunt) live to be two or three years of age. You will see others, with a little more brain, who will never be able to talk; but they will laugh, cry, be pleased by certain external objects, and be displeased with others. You will find others, again, with more brain; who are able to go about, and may be taught to do certain things mechanically, as it were by art; but they never can exercise judgment. They may be brought to go to bed at a certain time; to get up at a certain time; and to eat at a certain time; but they never go beyond that. Others have sufficient brain to perform the lower offices of life; but not to perform any duties that argue the least intellect. Others, who have still more, can perform the offices of life; but they are known in the world as "innocents";—very weak persons. So we go on, till we come to fair average people; and we pass them, and come to very intelligent characters.

However, these intellectual varieties do not depend upon the development of the *whole* of the head. It is found, unquestionably, that they depend upon the development of the anterior part; for you will have many of these weak people sufficiently large, in every part of the head but the front. On the other hand, you will have persons with a very small development of all the parts of the brain, except the front; and who are sufficiently clever persons. These are un-

doubted facts; and whenever you see a deficiency of the development of the anterior part of the brain, and necessarily of the anterior part of the head, you may take it for granted that the individual can only manifest a very limited display of intellect.

IDIOCY.

I may first premise, that under the term "unsoundness of intellect," are comprised idiocy and insanity. By idiocy, or idiotism, is meant the absence (or rather the deficiency) of intellect; a deficiency amounting to such a degree, as to disqualify an individual for the common offices of life. Generally speaking, a madman has a *wrong* opinion, or a *wrong* feeling; but an idiot may be generally said to have *none*. The madman is *wrong*; but the idiot is *defective*.

Now this defect (according to our law) must be so great, that "the individual, in order to be constituted an idiot, must be unable to number to twenty, or to tell his age, or to answer any common question; by which it may plainly appear, that the person has not reason sufficient to discern what is for his advantage or disadvantage." To quote again from the same work,—Burn's "Ecclesiastical Law," —"That man is not an idiot, who has any glimmering of reason; so that he can tell his age, know his parents, or such like common matters."

This deficiency of intellect, does not refer to any deficiency of the *external senses*. Idiots can often hear, see, taste, feel, and smell, just as well as other people. A man may be an idiot, and yet be able to use his five external senses perfectly. Neither does it at all refer to what phrenologists call the *knowing faculties*; by which a person judges of music, colours, distance, size, number, or can recollect words. An idiot may do all these things;—may understand music to a certain extent; may distinguish colours very well; and also size, distance, and numbers; but he may be a complete fool for all that. Many idiots are defective in these respects. Very great idiots know nothing at all;—they can merely eat, drink, and slumber. Many persons are idiots who can count above twenty, notwithstanding what the law says; and medical men would declare many persons to be idiots, although they could count to a hundred, and above. Some idiots take a great delight in music. I do not know that they can ever be great musicians; but they know what music is;—they understand it; and some sing very well. Some will sketch, likewise, exceedingly well; and some have an excellent memory of words; so that they will remember long passages. Spurzheim saw, at Hamburgh, a young man, the anterior part of whose brain was favourably developed; but whose forehead, above that part, was scarcely an inch in height; and in whom the movements of the superior parts of the brain was consequently impeded; and he had only the functions of the inferior anterior parts. Now this individual recollected names, numbers, and historical facts; and repeated them all in a mechanical way;—proving that he had a much better memory than many acute men; but the functions of comparison, penetration, and sagacity,

were utterly wanting. Spurzheim likewise says that he saw, at a poor-house, a boy who excelled in verbal memory; but as to *judgment* he was an idiot. Dr. Roberts, he says, shewed him an idiot, who repeated whole passages from the bible;—simply from having heard them read. He adds, that he saw an idiotic child, who sang several airs; and if others began to sing, she accompanied them in harmony. It is very possible, therefore, for an idiot to have a pretty tolerable share of those particular faculties, by which a person understands distance, knows colours, can recollect numbers, calculates, distinguishes one object from another, and so on. It is not, therefore, the deficiency of *these* things, that constitutes a person an idiot; for many very clever persons are deficient in these particulars. Many clever persons cannot tell red from green: and many clever persons cannot tell "God save the king," from "Rule Britannia." Others, again, can never be made to calculate; and some persons can scarcely keep their own accounts, though otherwise they are reflecting and very clear-headed persons. On the other hand, a person may be an idiot, though he *has* these faculties. An idiot may have them; but their absence does not constitute a man an idiot.

You of course perceive that there is every degree of deficient intellect; from the *slightest* to the most *perfect* idiotism; from one, in which an individual merely eats, drinks, discharges his fæces and urine at all times and in all places, slobbers and grunts; up to that in which a person is merely called *imbecile*,—merely, perhaps, *a little soft*. There is every sort,—every insensible degree from the one to the other; all of which we see continually in life. Now, such a degree as makes a man "soft," but will not qualify him by law to have the privileges of an idiot, you will find pourtrayed by Shakspeare, in the "Twelfth Night," and the "Merry Wives of Windsor." You cannot have a better description of an idiotic, or weak person, than Shakspeare has given. Sir Andrew Ague-cheek, in the "Twelfth Night," is a very fine illustration of idiocy. He says, "Methinks, sometimes, I have no more wit than a Christian, or an ordinary man has; but I am a great eater of beef, and I believe that does harm to my wit. I would I had bestowed that time on the tongues, that I have on fencing, dancing, and bear-baiting. O, had I but followed the arts!" Then you will recollect, in the "Merry Wives of Windsor," an equally sagacious individual, in the character of Slender. He says, "Though I cannot remember what I did when you made me drunk, yet I am not altogether an ass. I'll ne'er be drunk whilst I live again, but in honest, civil, godly company, for this trick. If I be drunk, I'll be drunk with those that have the fear of God; and not with drunken knaves." These are two illustrations of individuals, who were weak enough to be below other people; and yet not so weak as to be called downright idiots.

Now as idiotism (which is, more or less, a deficiency of intellect) varies, so insanity, being a disturbance of the mind, must have infinite varieties. You perceive, at once, that insanity must have these varieties; because many faculties of the mind may not be disturbed

at all, and others may be disturbed in various proportions; and therefore the varieties of insanity can never be described perfectly. Idiotism, however, being merely a deficiency of intellect, and idiots merely varying as to more or less deficiency, the one must be more simple than the other; yet you will find that idiots vary in their character, just like sane people. There are no two persons alike in their senses, any more than there are two faces alike; and idiots vary in their character in the same way. Many may be idiots to the same degree; but there are various other parts of their character which do not correspond; and therefore idiots will vary in their character to a great degree;—just as sane people do. For example, some have one of the faculties of which I have been speaking, and which phrenologists call the *knowing faculties* (such as music),—some will have *one* very strong; and another will have *another* faculty very strong; and all may have them in various degrees.* So, again, some idiots will have one *propensity*,—one *feeling*, very strong; while others will have a different propensity or feeling very strong, and some will have several; so that they vary in their character (to say nothing of idiotism) just as the rest of the world.

Although the deficiency of any of these knowing faculties, and the deficiency of any feeling, (such as good-will towards mankind, revenge, passion, lust, and so on), does not constitute idiotism, yet if the anterior superior part of the brain be so defective as to constitute the individual an idiot, there is seldom so great a defect in that part of the brain, without there being a good deal wrong in other parts. You never find an exceeding degree of monstrosity, without finding minor degrees. When a fœtus is formed without a heart, there are generally supernumerary fingers and toes. Wherever there is a *great* monstrosity of body, there is almost always a *minor* monstrosity; and so when the head is defective in *one* part, to such a degree as to constitute idiotcy, there is generally more or less defect in *other* parts. Thus it is very common to see an idiot with these various *knowing* faculties defective, as well as those which constitute him an idiot; and it is very common for him to have certain propensities deficient, or some in excess. There are generally other parts of the brain wrong; although the erroneous state of other parts does not constitute the disease.

Some idiots, in conformity with all that I have been saying, are exceedingly gentle and good-natured. They never do any harm; and do every thing that they are bid. Some, on the other hand, are very passionate;—never can be trusted; and if you excite their

* The following is a list of the different "organs," according to Mr. Combe,—the most eminent living phrenologist. 1. Amativeness. 2. Philo-progenitiveness. 3. Concentrativeness. 4. Adhesiveness. 5. Combativeness. 6. Destructiveness. 7. Secretiveness. 8. Acquisitiveness. 9. Constructiveness. 10. Self-Esteem. 11. Love of Approbation. 12. Cautiousness. 13. Benevolence. 14. Veneration. 15. Firmness. 16. Conscientiousness. 17. Hope. 18. Wonder. 19. Ideality. 20. Wit. 21. Imitation. 22. Individuality. 23. Form. 24. Size. 25. Weight. 26. Colouring. 27. Locality. 28. Number. 29. Order. 30. Eventuality. 31. Time. 32. Tune. 33. Language. 34. Comparison. 35. Causality.

feelings into violent passion, they will take any thing they can procure, and murder you, if possible. Some are exceedingly mischievous and sly, without being passionate. Some are very much disposed to thieve; and will steal every thing they can. Others, again, are exceedingly low spirited and gloomy; and some are exceedingly lustful;—have violent sexual desires. These desires frequently go wrong; partly from some error in the faculty itself, and partly from some deficiency in intellect; so that many of them are beastly;—not merely *lustful*, but *beastly* in various ways. Some are very prone to imitation; and I knew an instance of an idiot in a workhouse, who had all the imitative disposition of a monkey. When the surgeon went to visit the patients in the workhouse, he universally observed what was done; and as soon as the surgeon was gone, he would feel the pulses of the various patients; and get a piece of tape, and begin bandaging up their arms, in order to bleed them. Whatever he saw done, as soon as he had an opportunity, he regularly went and did the same. This idiot was in the workhouse at Clapham. You find cases, of a similar description, mentioned by Pinel, and other writers on insanity. There is no doubt about there being a propensity in the human mind to imitate. All acknowledge this;—phrenologists and anti-phrenologists; and this was so strong in this idiot, who had no sense to restrain him, that it led him to do ridiculous acts; exactly like a monkey.

This state of mind (idiotism) is very often conjoined,—like all diseases of the nervous system,—with *other* diseases of the nervous system. It is frequently connected with epilepsy, with chorea, and with paralysis; so that you continually see idiots epileptic, or constantly shaking, and more or less paralytic.

When the disease is congenital, there is generally a defect of brain at the superior anterior part; and generally the whole head is too small. Gall says, that if the head be only from fourteen to seventeen inches in circumference, and only from ten to twelve from the root of the nose to the foramen magnum, there is always more or less stupidity; that heads of eighteen inches and a half in circumference are small, and give but a mediocrity of talent; and that the full size is from twenty-one to twenty-two inches in circumference. However, idiotism may be produced without a defect of brain. The brain may be plentiful enough; but of bad materials. Dr. Spurzheim says that he dissected an idiot, two years of age, in whom the grey and white substance were of a greyish-blue colour; and, instead of being of the ordinary texture, were of a gelatinous quality. Such a brain as that, although there was plenty of it, was not of a sufficiently good quality to execute its functions. In such an instance, the brain may be very large; but the additional size will not counterbalance the bad quality.

It has happened, sometimes, that an individual has been born an idiot, though with a sufficiently well developed head; and the brain has appeared suddenly to improve in quality. The brain improves in quality, as the body grows. It becomes of a different quality, as

age advances, to a certain point. It attains a perfection of structure; —not as to *size* and *development* merely, but perfection as to *quality*; and then it afterwards declines (like all other parts of the body) in quality and size. In some individuals, the improvement of quality does not take place at the ordinary period; and the result is, that they remain children longer than other people; and recover from their idiocy at a certain period of life. The same circumstance occurs with regard to puberty. Many instances of this are on record. There is a case mentioned by Wilson, of puberty not taking place till the individual was twenty-eight years of age. There was no beard, or hair on the pubes, and the testicles were small, till the individual was twenty-eight; when suddenly he got a pair of whiskers, a tolerable beard, hair below, and good testicles;—fell in love, and was married. Now it is just the same with the brain altogether. The brain, in some individuals, does not go through its changes of structure at the usual period; so that the individual is sometimes idiotic during the first part of his existence; and, as he grows up, becomes like other people. Most frequently, of course, this is not the case;—the same defective power of development continues; but to illustrate that a torpid brain has sometimes been excited to action by some external circumstance, an instance is mentioned of a boy, who possessed inferior talents till a tile fell on his head; when he began to show great intellect. Dr. Mason Good says that he knew a lad cured of his idiocy, by a fall from the first-floor to the street. To mention instances of a similar kind, I may state that a German writer relates a case of fracture of the skull, by falling from a great height, which cured deafness; and after the fracture the man became able to speak. This was upon the same principle as idiots being cured by the fall of a tile, or anything else. In the "Philosophical Transactions," Volume xxv, you will find a case where want of hearing was cured by a fever. The patient was seventeen years of age, and had never heard; but fever came on, and produced such excitement, that he afterwards heard like other people; and having heard, he began to speak, though he had never spoken before.

In cases of torpidity of the brain, where there is such a degree of inactivity as to produce idiotism, you may expect the head to be of the same size as in other persons; and it may be large, from the brain being blubbery, or from there being a collection of water; as was the case with the head of Cardinal, which I showed you. He ought to have beaten Lord Bacon, and Sir Isaac Newton too, if the mere *size* of the head had alone to do with it.

When an idiot is so congenitally, he seldom lives to be above thirty. The defective power which causes the brain to be in such a state, is generally connected with such a want of energy throughout the whole body, that the patient seldom lives beyond thirty; and the greater the idiocy, *cæteris paribus*, the shorter time does he live.

Just as the brain may be *originally* torpid and inactive, so it may fall into the same state from excessive action. Precisely the same effect may be produced, if there be excessive action before the brain

has acquired its full growth. This is very likely to be the case; for many precocious children, who have been shown to the world as prodigies of talent, have (through the excessive application imposed upon them by their preceptors) become idiotic; and when they have not become idiotic, they have frequently died. The powers of the body have been exhausted, and some organ more than another has fallen a victim to disease; so that they have died. Intense application will produce temporary idiotism. Many persons who have bent their minds upon a particular object, and have worked night and day, have frequently fallen into a state of fatuity, which has lasted only for a certain time. The brain has been over-fatigued; and, after a time, it has recovered itself.

You may have fatuity or idiocy come on in after life (when persons have not been born idiotic), from other causes;—for instance, from blows; and from any of the diseases which I before mentioned, when treating of the morbid anatomy of the brain. Any such disease as causes paralysis;—tumors pressing on the anterior part of the head; softening of the anterior lobes (those parts which, I stated, are deficient, when a person is a congenital idiot); pressure, softening, or anything which impedes the functions in any way;—all these will produce idiotism. Fever being so often accompanied by violent irritation of the brain, will frequently leave idiocy; and insanity has done the same. When persons have been long insane, it is very common for them to lose their faculties altogether. Idiocy is a very common result of insanity.

The words "*idiocy*" and "*fatuity*" are not applied indiscriminately. They are nearly the same thing; but "*idiocy*" is generally used, by modern writers, for that which is congenital,—born in a person; and I believe you will generally find "*fatuity*" applied to that imbecility which comes on in after life. The person not having been an idiot at first, but having become so, it is said that he has become *fatuitous*; and if insanity have been the particular disease which has preceded the imbecility, then the imbecility is called *dementia*;—*unmindedness* (from "de," *privative*, and "mens," *the mind*). Hence, if a person be born an idiot, his case is one of *idiotism*; if imbecility come on afterwards, from a common cause, it is called *fatuity*; but if it be preceded by insanity,—if it be nothing but the degeneration of insanity, then it is called *dementia*.

Now if there be great deficiency of the anterior part of the head,—if it be a question of idiotism and imbecility of mind, the case is very easily ascertained; but the head may be large, and yet the person may be an idiot. In the latter case you have to question him as to common circumstances,—to ask him how many halfpence there are in a sixpence, and how many sixpences in a shilling. If he was born in April, ask him whether he was born the January before; and things of that description. You should ask him questions on the most ordinary subjects; and generally put money before him, and make him count it;—count it as simple pieces of money; and then make him show the value of the whole; and you will soon

find out whether he is an idiot or not. If he stumble at such questions as these, you may give an opinion that he is not qualified to manage his own affairs.

But besides such an examination as this, it is right to look at the individual's head; and if you see it morbidly small, your opinion as to his idiocy would not be increased, but your prognosis would be exceedingly affected by it. If you see there is an absolute want of brain, you may take it for granted that the prognosis ought to be unfavourable. There is little hope of its growing to such an extent, —becoming of such dimensions, as will enable him to be clever, like other people. This will also guide you, very much, in your attempts at benefitting the sufferer. If you see a great deficiency of brain, all attempts at benefitting him will be hopeless. The schoolmaster may flog; but he will never make any thing of such a head. You might also derive great advantage from inspecting the head, and observing the general character; so as to give directions to his friends how to manage him. You should observe what passion is strong enough to render it necessary for those about the person to be on their guard against it. This will be of use, as well as observing the imperfection of the head, for the purpose of ascertaining the degree of idiotism that exists in the individual.

As to curing the disease, all that can be done is to put the patient in as healthful circumstances as possible; to feed him well, give him fresh air, and improve his body altogether, on the one hand; and to cultivate particularly those parts of the mind which are best developed, on the other. If there be found any talent for music or calculation, you must make the best of it. A story is told, that may be true, of a boy who was an idiot up to eighteen years of age; when he saw a beautiful girl, and was struck with love for the first time. It shed such a flame throughout his brain, that he became as clever as the rest of the boys in the village. I have no idea of love being so employed; but if you find a faculty tolerably strong, it should be made the most of;—whether it be an intellectual or a knowing faculty; and if other faculties be not excited by it, yet it may be strengthened, and the individual may be rendered much less deficient than he otherwise would be. He may be unable to gain the command of *all* his faculties; but by strengthening *one*, he may be rendered not so miserable an object, as if he were altogether neglected. This is an important point; because to set down an individual as an idiot, when he has some one faculty that might be made something of, would be cruel; and if you see the development of any thing that would enable you to make the experiment, it ought not to be passed by.

With respect to the importance of good air and good food, in lessening idiotism, I may mention that particular form of idiotism, called *cretinism*; which is produced by bad air or bad water. I should conceive there can be no doubt on the subject. It is found in the valleys of the Alps. You cannot travel in Switzerland among any of the valleys, without seeing plenty of cretins. The air is stagnant and wet;—full of the

exhalations from marshy ground. The water, for the most part, is very bad; and the people are so ignorant, in many parts, that they drink water containing a great deal of chalk, although good is to be had. They are miserable objects;—mostly always short. In fact, they are dwarfs, and in general have enormous heads. Their features are shrivelled; they look like decayed autumnal leaves, or something like a shrivelled apple; and all of them have *ace-of-spades* noses. Their limbs are soft and flabby; their mouths are wide,—extending from ear to ear; their lips are very thick; and they have a dry-looking skin. All of them are more or less idiotic, and many of them have a goitre;—an enlargement of the thyroid gland.

These poor creatures are found, after death, to have the bones of the head very thick; and sometimes there is a quantity of water in the head. They are more or less hydrocephalic; and there is hypertrophy of the bones of the head. The cavity of the skull is not so large as the external appearance of the head would lead you to suppose. Sometimes the diminished capacity is from the excessive quantity of bone, and sometimes from a collection of water. In other cases the brain, although large enough, is of bad quality. The tongue, in some cretins, is hypertrophied;—too large for the mouth; and a large number of them are deaf and dumb. There is a great difference in their dispositions. Some should never be trusted;—they are such destructive creatures, that they do all the mischief they can; while others are innocent, and as tame as lambs. Some females have a great number of these children. They have desires, like other people; and they fall in love with each other, and marry. Certainly *nobody else* would marry them.

It is said, that if two persons marry with a bronchocele, their progeny generally have a goitre; and if their goitreous progeny marry any other persons with a bronchocele, then the third generation are sure to have something *more* than bronchocele;—they are sure to be idiots. Many persons assert this; but I do not know whether it is true; though I have endeavoured to ascertain it. There is a great relation between goitre and cretinism, no doubt; and what affects the thyroid gland, if it also affects the head and brain, may produce idiotism.

This is all I have to say about idiocy. It is more an object of curiosity, and medical jurisprudence, than of medical treatment; but it is very interesting, both in a physiological and a pathological point of view; and sometimes it is important in practice.

INSANITY.

I am now about to speak of that kind of unsoundness of intellect which is called *insanity*. You will recollect that unsoundness of intellect comprises idiocy, imbecility, and insanity. Insanity is called "lunacy,"—"mental derangement,"—"mental aberration,"—"hallucination,"—"alienation,"—"madness."

In speaking of mental deficiency, I stated that it was not every kind of mental deficiency that made an individual imbecile, or an

idiot. The various feelings of the mind may be deficient, and very inconsiderable;—so inconsiderable as to be all but absent; and yet the individual may not be an idiot. I stated that certain intellectual faculties (such as the faculty of music or calculation) might be deficient,—very deficient, and the person not be at all an idiot. So aberration of mind, in insanity, does not exist merely because there is something wrong in the mind. There may be much very wrong in the mind, and yet the person not be at all *insane*;—just as there may be a great defect in the mind, and yet the person not be at all an *idiot*.

In the first place, derangement of *volition* does not constitute insanity. A person may have palsy of motion; and yet he is not insane. He may wish to move his limbs, and be unable to do so; or he may wish to move them in one direction, and they may go in another, in a completely opposite direction; but he is not, on that account, insane. Neither does a want of the *external senses* constitute insanity, any more than it does *idiotism*. There may be mere palsy of the senses;—there may be a want of sensation from disease of the external organs of sense; and yet the person may be perfectly rational. Neither does it refer at all to the *knowing faculties*, such as music and calculation; which may be called *internal* senses. These may be more or less wrong; and yet the person not be insane. Just, therefore, as the want of effective volition,—just as the want of external sensation,—just as the want of any one of the knowing faculties, does not make a person an idiot; so a wrong operation of volition over the voluntary muscles,—an arm going one way when the person wishes it to go in another,—is not insanity. A person labouring under chorea, or under tetanus, is not insane. So a wrong sensation does not constitute a person insane. He may have double vision;—he may see two fingers, when only one is held up; yet he is not on that account insane. Neither if a person see images,—figures,—spectres, is he on that account insane, if he do not believe that their existence is real. Some persons see objects which really do not exist;—images of objects which have no existence; and they *know* that such things do not exist; and, therefore, they are not insane. They are aware that it is a mere deception.

Some see, in these circumstances, appearances of human beings, brutes, and various animals; but they are perfectly aware that it is entirely a morbid appearance. One of the most remarkable instances of this description, occurred at Berlin; in the person of a bookseller named Nicolai. He saw an immense number of objects,—people, animals, and brutes,—at certain times; but he was aware that it was all the effect of morbid excitement. He had gone through considerable mental application; and being aware that this was all a delusion, he was no more insane for seeing them, than a person would be for thinking he saw *two* fingers, when you held up but *one*. You know that Brutus and Socrates are said to have seen;—the one the shade of Cæsar, and the other the *familiar spirit*,

as he called it; but if neither the one nor the other believed this, they were not mad; or if they merely believed it in accordance with the belief of the day, then they were not mad; but if they knew better, and yet believed these things, then they were deranged. Hence there may be false perceptions, and yet the individual may not be mad; but a person may be mad, and also have a false conception. Many men, absolutely mad, think they see things which they do not; but many persons, without a false perception, see something that has no existence; but knowing it has no existence, they are not deranged; and again, many persons, absolutely mad, never see any unnatural appearances whatever.

But in a great number of cases of insanity, you find an absurd belief; and this may refer to something past. There may be a fixed opinion, altogether absurd, upon matters that have passed; and there may be also an absurd opinion as to something *present.* For instance, persons so affected, may see things which other people do not; and they may positively believe it. Insanity, therefore, may be an absurd belief, as to things present and things past; and thirdly, that absurd belief may refer to a mere abstract opinion. Persons may believe something so preposterous, that every body will consider them mad for so doing. I will give you instance of all this. A case is recorded of a butcher, who firmly believed he saw a leg of mutton hanging from his nose; and therefore he was certainly mad. Another is told of a baker, who fancied himself butter; and refused to go into the sunshine, lest he should melt. A painter thought he was soft;—he was so in mind. He thought he was so much putty; and that he could not walk without becoming compressed, like putty. Others have fancied themselves glass; and would not sit down lest they should crack. Luther was an instance of an absurd opinion of this description. Luther, although he was so able a man, was mad on some points. All people have their weak points; and he had his. He fancied the devil was in him; as did also the Roman Catholics; and that he heard him speak. Luther's christian name was Martin; and in Hudibras there is the following couplet upon it:—

> " Did not the devil appear to Martin
> Luther, in Germany, for certain?

You find it stated, in a note to this passage, that " Luther, in his works, speaks of the devil appearing to him frequently; and how he used to drive him away by scoffing and jeering him; for Luther observes that the devil, being a proud spirit, cannot bear to be contemned and scoffed. 'I often said to him,—Devil, I have bewrayed my breeches; canst thou smell that?'" Luther used to talk to the devil; and the Popish writers not only believed that the devil was in him; but some of them affirm that he was got by an incubus;—a kind of young devil; and that at length, when he died, he was strangled by the devil.

Dr. Ferriday, of Manchester, had a patient of the same per-

suasion as Luther. He fancied he had swallowed the devil; and he would not discharge the contents of his alimentary canal, through a benevolent feeling;—lest he should let him loose into the world. I heard a gentleman speak of a man, who would not make water lest he should inundate the country. He thought the urine would come from him in such torrents, that the country would be washed away. A similar case to this was relieved by lighting a fire round the patient, and making him endeavour to put it out, lest the house should be burned down. Many persons fancy there are frogs, serpents, and snakes, within them; and one woman fancied that a whole regiment of soldiers were in her. One man fancied he was too large to go through a door-way; and when he was pulled through he screamed, and fancied he was being lacerated, and actually died of fright. Another woman, instead of fancying that she had a regiment of soldiers in her, fancied that she had a monster in her genitals; and when she got rid of this idea, by the contrivance of her physician, she took another fancy; namely, that she had been dead, and had been sent back to the world without a heart, and was the most miserable of God's creatures. At the "Friend's Retreat," near York, one patient writes,—"I have no soul. I have neither heart, liver, nor lungs; nor any thing at all in my body; nor a drop of blood in my veins. My bones are all burnt to a cinder. I have no brain; and my head is sometimes as hard as iron, and sometimes as soft as a pudding." One man, it appears, thought he had not got his own head. He is described, you will recollect, in Moore's "Fudge Family at Paris." He says:—

"Went to the mad-house. Saw the man
Who thinks,—poor wretch!—that (while the fiend
Of discord here full riot ran)
He, like the rest, was guillotined;

But that when, under Boney's reign,
(A more discreet, though quite as strong one),
The heads were all restored again,
He, in the scramble, got a *wrong one*.

Accordingly, he still cries out,
This strange head fits him most unpleasantly;
And always runs,—poor dev'l!—about,
Inquiring for his own incessantly."

Bishop Warburton, in a note to one of his works, speaks of a person who thought he was converted into a goose-pie; and Dr. Arnold saw a man who fancied himself in the family-way. Pope, in his "Rape of the Lock," describes many of these fancies. He says, in giving a sketch of hypochondriacal persons,—

"Unnumber'd throngs on every side are seen,
Of bodies changed to various forms by spleen.

Here living tea-pots stand; one arm held out,
One bent;—the handle this, and that the spout.
A pipkin there, like Homer's tripod, walks;
Here sighs a jar, and there a goose-pie talks.
Men prove with child, as pow'rful fancy works;
And maids turn'd bottles, call aloud for corks."

A man in the University of Oxford, fancied himself dead,—absolutely dead; and lay in bed, waiting for the tolling of the bell; but not hearing it at the time he expected, he fell into a violent passion, and ran and tolled it himself. He was then spoken to, on the absurdity of a dead man tolling his own bell; and it is said that he returned, and was afterwards sound in his intellect. However, he must have been pretty nearly in his senses at this time;—he must have been ready for sanity; or such a change would not have been effected by a mere mental cause, like this. Simon Brown, a dissenting minister, wrote the best answer to Tindal's work, entitled "Christianity as Old as the Creation;" but, notwithstanding the great powers of mind displayed in this work, he thought that, by the judgment of God, his rational soul had perished; and that he had only brute life; and he absolutely inserted this in the dedication of his work to the Queen. This dedication, however, was afterwards suppressed. Baron Swedenborg, a very learned and able man, thought that he had communications with the Almighty for thirty years; and that he had been shewn, by the Almighty, the mysteries of nature. Many think he was right; but no one could have that idea without some insanity. As some believe this, I mention it as an instance adduced by others, of partial insanity. It is similar to the case of the celebrated Pascal; who, while he was working the problem of the cycloid curve, with great powers of intellect, was tied (by his own desire) in his chair; lest he should fall into a yawning gulf before him. He laboured under this partial insanity, while his powers of mind were otherwise as strong, and he was as much in his senses, as other people who have no madness whatever. One patient in the "Retreat" near York, wrote the following verses on the patient who described himself as having neither heart, liver, brain, nor any thing else.

"A miracle, my friends! Come view
A man (admit his own words true)
Who lives without a soul;
Nor liver, lungs, nor heart has he;
Yet sometimes can as cheerful be
As if he had the whole.

His head (take his own words along)
Now hard as iron, yet ere long
Is soft as any jelly;
All burnt his sinews and his lungs;
Of his complaints not fifty tongues
Could find enough to tell ye.

Yet he who paints his likeness here,
Has just as much himself to fear
He's wrong from top to toe.
Ah, friends, pray help us, if you can!
And make us each again a man;
That we from hence may go!"

In insanity, therefore, you see that *all* the faculties are not deranged. There may be merely an absurd belief upon some one point; and the patient may otherwise be in his senses. Many, indeed, who are deranged, will read and understand what they read. They will paint, exhibit mechanical contrivances, work, and talk rationally on many subjects;—nay, more than that, some will shew extreme sagacity in accomplishing their mad purposes, in concealing their mad impressions, and convincing others of the truth of their mad notions. In a case of madness tried at Chester, before Lord Mansfield, the patient was so clever, that he evaded questions, in Court, the whole of the day; and seemed to every body perfectly sane. Dr. Batty, however, came into Court; and knowing the point of the man's derangement, asked what had become of the princess, with whom he had been in the habit of corresponding in cherry-juice? Instantly the man forgot himself; and said it was true he had been confined in a castle; where, for want of pen and ink, he had written his letters in cherry-juice, and thrown them into the stream below, where the princess had received them in a boat. This man had had sagacity enough, during the whole of the day, to answer correctly all the questions put to him in Court;—Lord Mansfield being the presiding judge.

This, however, is not all; for some persons, in insanity, have some of their mental faculties increased. Dr. Rush says that he had a female patient deranged, who composed and sang hymns and songs delightfully; and yet she never shewed any talent for either music or poetry before. There was a partial excitement of the brain, while another part was going wrong. He said that he knew two cases where, in insanity, a great talent was shewn for drawing. Dr. Willis had a patient who, in the paroxysms of insanity, remembered long passages of Latin authors, and took extreme delight in repeating them; but only during the period of the paroxysms. Dr. Cox mentions a musician, who talked madly on all subjects but music; and his talent for this appeared increased. His performances on the violin were strikingly singular and original. Dr. Rush mentions the case of a gentleman who was deranged; but who often delighted and astonished the rest of the patients, and the officers of the institution, by his displays of oratory when preaching. Pinel, the French physician, mentions the case of a man, who was very vulgar at other times; but who, in his paroxysms of insanity, while standing upon a table in the hospital, discoursed very eloquently upon the revolution; and with the dignity and propriety of language of the best educated man.

Circumstances similar to these, have been seen in fever. When the brain is under the excitement of fever, a person who has shewn but little talent for singing before, may sing very correctly; and sometimes, although an individual may be delirious, yet he will speak very eloquently upon certain subjects, for a short time;—for this state does not last long.

Some, however, are not so happily circumstanced as those we have mentioned; but, in their insanity, are wrong upon *all* points. You may have persons deranged on only one or more points, while the rest of the faculties are *sound*; or you may have them deranged on one or more points, while one faculty, or more, will be *increased*; but you may have them wrong on *all* points. In the latter case, they will ramble from one point to another, display great inconsistency, and exhibit a wild association of ideas. They will be incapable of fixing their attention sufficiently to speak correctly, or to read. So wrong are they that, very likely, they do not recognise those with whom they were formerly intimate; or if they do recognise them, it is in a very strange manner; and they have generally a very imperfect memory altogether;—most likely, have false ideas of nearly every thing with which their memory is charged. Their absurd opinions, too, are general. Perhaps they reason very incorrectly on every thing; or they probably make no attempt at reasoning at all. In partial insanity, which is called *monomania*,—insanity on a single point, when they do reason correctly from a starting point, it is to be remembered that the starting point itself is partly incorrect. But in intense insanity, they do not make an attempt to reason at all; or they reason in the most incorrect manner.

So much with respect to the intellectual *faculties*. But in insanity the *propensities* and *sentiments* are frequently disturbed. Some are so far disturbed as to be superstitious; some, again, are very respectful; some, again, are very impious. There was one madman who cursed God for his creation; and especially for having given him a human form; and he wished to go to hell, to avoid the disgrace of associating with the Deity. A person saying to him it was a bad day, he replied,—"Did you ever know God make a good one?" Some are thievish; some are modest; some are very silly; some are lascivious; some are depraved in their sexual feelings; some are very cheerful; some are melancholy; some are fearful. Sometimes violence and tranquillity, or melancholy, alternate. You recollect the passage in Shakspeare:—

> ——— "This is mere madness!
> And thus, a while, the fit will work on him.
> Anon, as patient as the female dove,
> When that her golden couplets are disclosed,
> His silence will sit drooping."

There is no real difference between *mania* and *melancholia*. You will find the latter term employed by many writers to signify madness connected with great depression of spirits; and you will see it

employed by Pinel to partial insanity;—that is, to designate monomania. But this is improper. There is no essential difference between mania and melancholia. One faculty of the mind is disturbed in one case; and one in another. One person may be gloomy, and another cheerful; but the latter is just as mad as the former. A person may be gloomy to-day, and cheerful to-morrow.

In insanity, every feeling of the mind may, in its turn, be excessive; or every feeling may be defective, or at least overcome by other feelings; and every feeling may likewise be depraved. In consequence of the varied state of feeling in insanity, you have various physiognomies. You have one madman with the physiognomy of pride;—holding up his head as high as he can, and looking with scorn on those around him. In others you will see the physiognomy of suspicion;—a hanging down of the head; in others you will see the physiognomy of rage;—a frowning of the eye-brows, and a derangement of the features. You have the passion displayed in insanity, according to the state of the feelings.

In some instances of insanity, you have nothing but the *feelings* affected. There is no aberration of intellect; but it is a disease of some of the feelings. There can be no question that some have an irresistible desire to commit murder. They are sane in every point but that; but they are irresistibly impelled to commit murder; and the moment they have committed it, they have confessed it, and expressed the greatest regret. Many have felt the fit of desire coming upon them; and have entreated their friends to confine them, to prevent them from doing it. This derangement of the feelings will sometimes take *one* turn, and sometimes *another*. There can be no doubt that some have felt an impulse to destroy in a particular manner;—by burning. Some have felt an impulse to destroy themselves;—to commit suicide; and others, not only to murder individuals, but to murder *particular kinds* of individuals;—to murder their *children*. When I was at the University, there was a person who was said to have attempted, three times, to set the college on fire; and at last he was tried for it; but as he was acquitted, I suppose he had not made the attempt. It was ascertained that, when he was young, he had attempted to drown a child; yet nobody ever suspected him of being mad. You may recollect the instance of a man, who murdered a very excellent gentleman and his lady (Mr. and Mrs. Bonner) at Chiselhurst, in Kent. The murderer was a footman in the family; and, one night, he left his room, went up stairs with a poker to the apartment of his master and mistress, and beat their brains out;—for no reason whatever. He was asked his reason; but he could give none. He said that he had always been treated by them with the greatest kindness; and all he knew was, that he felt suddenly, in the night, a desire to kill them; and he supposed the devil had prompted him to the act. No other sign of insanity was detected in him; and as, at that time, it was not supposed that such an occurrence could arise from insanity, without other proofs of insanity being evident, he was hanged. Gall men-

tions the case of a person at Vienna, who went to witness an execution; and was seized with a propensity to kill. At the same time, he had a clear consciousness of his situation. He expressed the greatest aversion to such a crime. He wept bitterly, struck his head, wrung his hands, and cried to his friends to take care and fly away. He felt the inclination; he regretted it; and entreated every one to prevent it, by putting him in prison. Pinel mentions the case of a man, who exhibited no unsoundness of intellect; but who confessed that he had a propensity to murder, which was quite involuntary; and his wife, notwithstanding his tenderness for her, which was real, was near being murdered;—he having had only time to warn her to fly. In the interval he expressed the same remorse; felt disgusted with life; and attempted, several times, to put an end to his existence. In a work by Mr. Hill, you will read of a man who was tried at Norwich, in 1805, for wounding his wife, and cutting his child's throat. He had been known to tie himself with ropes for a week, to prevent him from doing mischief to others. One of the members of a family in London, whose maid-servant was executed for attempting to poison the whole family with arsenic, is said to have used these words;—"Do, for God's sake, get me confined; for if I am at liberty, I shall destroy myself and wife. I shall do it unless all means of destruction are removed; and therefore do, good friend, have me put under restraint. Something from above tells me I must do it; and I shall." Arsenic was put into a pudding; and the maid-servant was executed for it; but many persons were perfectly convinced of her innocency.

Respecting the disposition to destroy by fire, Gall mentions that he saw a person in prison, at Friburgh, who had set fire to his house four times in succession; and who, after he had set fire to it, tried to put it out. Once he seized his child, lest it should be burned. The moment he had set his house on fire, he was contented; —the orgasm was over; and he was as anxious as any one to see it put out; but four times he set fire to his house. Some have an irresistible desire to steal;—without any other mark of insanity. Gall says that the first king of Sweden was always stealing trifles. Instances are mentioned of a German, who was constantly pilfering; and of another who had the desire entered the army;—hoping that the severe discipline there would restrain him; but he gave way to the desire even there, and was very near being hung. He then became a friar, with the same hope; but he still felt the same desire, and carried all the things he could to the cell; but as he could only get trifles, he was not noticed; and he went on with his propensity. Gall also mentions that a person at Vienna, in the habit of stealing, hired a lodging to deposit his thefts; and when he had got a stock, he sold them. He only stole household matters. The wife of a celebrated physician, at Leyden, never went into a shop to buy any thing without stealing; and a countess at Frankfort had the same propensity. Another lady, notwithstanding all the care with which she was brought up, had the same desire to pilfer. You will find it

related of a physician, that his wife was always obliged to examine his pockets in the evening, and restore the things she found there to his patients. He always took something, as well as his fee. Meritz speaks of a criminal who, at the point of death,—at the moment he was about to be executed, stole the confessor's snuff-box. Dr. Burner, who was one of the physicians to the king of Bavaria, speaks of a person whom he knew very well, who enjoyed abundance, and had been well educated; but who, notwithstanding, was always stealing; and was made a soldier by his father and at last got hanged. The son of a celebrated and learned man, himself very clever, and respectably connected in every respect, could not resist this propensity; and I could go on furnishing you with instances without end, of individuals who apparently did this from insanity;—not from any criminal motives, but absolutely from a blind desire too strong for them to resist. So the sexual desire has been so inordinately strong in some people, that it has been said that a criminal, going to execution for a rape, has been anxious to repeat the crime as he was proceeding to the gallows. I know it is so with respect to an irregular mode of gratification;—masturbation. I was told of an instance by a medical man, not long ago. The individual was rather idiotic; and he had the desire so strong, that he would entreat his family to run out of the room. He could not resist the impulse to gratification. He cried and lamented it; but he had no power over it whatever.

You see, therefore, that the definition of insanity must be two-fold;—that there may be an aberration of any mental power from a healthy state, with inability on the part of the patient to discern that it *is* unhealthy. The man believes something absurdly wrong; but he is not aware of its absurdity. But there may be, *without* this or *with* it, an aberration of any mental feeling from the healthy state; without the ability to discern its unhealthiness, or without the power and the will to resist it. I mentioned, for example, that in one case of insanity, you will have *all* the faculties disturbed. The patient is not mad on any particular point, but it extends throughout. He is *universally* mad;—does not recognize his friends; or if he do, it is only a momentary recognition. He has no power of *attention*; and is in a state of great anxiety. In cases of mania, you may tell a madman almost as soon as you look at him. At least, custom enables us to see madness in a man's face. The term "*mania*" is employed, by some to signify madness in general; but by others it is restricted to that form where there is universal madness.

The definition of insanity, then, is two-fold. It may be stated to be,—"an aberration of any mental power from a healthy state; with an inability on the part of the individual to discern its unhealthiness;" because if an individual know a thing to be absurd, he is not mad. If a person see the devil in the middle of the day, and is sure it is not the devil at all, of course he is not mad; but if the man see it, and believe it, and plague you to death to believe it is a

reality, provided he has been better educated, he must be mad. But this is not the whole of the disease; and not the form in which it will sometimes appear; and therefore we must include in the definition,—"without an ability, on the part of the patient, to discover that it is an unhealthy state, or to resist it." If an individual have feelings so strong, that he cannot control them, he is not an accountable being;—he is insane. This is the definition of Spurzheim; and it is the best I have seen. I have met with no other that satisfies me. It is a *general* definition; and it includes all the forms you can give, in a *minute* definition of insanity. I have reflected much upon it; and think it will apply to every case.

With respect to the first part of the definition,—that in which is mentioned an intellectual aberration,—it may relate to a matter of external sense, or to a fact which may be present or past; and in that case there can be no doubt of a person's insanity. If a person firmly believe something to be actually a fact,—to be present,—to be existent, which you know is not the case, and which all the world knows is not the case (as, for example, that a leg of mutton is hanging to his nose);—then you know he must be mad. If the aberration refer to a matter of fact that is present, you may declare him to be mad; or if it refer to something which is past, on which you are equally certain, and on which he has had an opportunity of being well informed when in his senses, you may then conclude that he is mad. If he be certain that he lived two hundred years ago, then there can be no doubt that he is mad. Supposing, however, that it does not refer to a fact past or present, but to a mere opinion, then there may be considerable difficulty. Supposing the aberration to relate to an *opinion*, in order to constitute him mad, it ought not to be a subject on which there is some difference of sentiment among other persons; but an opinion palpably absurd to all other people in the same situation of life, or superior to him. If we did not make an allowance for education, for country, and for external circumstances, every sect in religion (for example) might consider the votaries of another sect to be mad. Every Trinitarian would consider a Unitarian to be mad; and every Unitarian would consider a Trinitarian to be mad. Quakers would consider Jumpers to be mad; and Jumpers would consider Quakers to be mad. Every allowance, therefore, is to be made, in a matter of opinion, for difference of education, and difference of situation. The notions entertained by one nation altogether, would be considered perfectly absurd by another nation; and therefore it must be an opinion upon matters, on which all persons of the same country, age, situation, and education, will allow such an opinion to be positively absurd.

Now if, in this country, a woman were to insist on burning herself to death after the decease of her husband, we should consider it insanity; but in India it is *not* insanity; because the people there have been educated in the belief of its propriety. It was mentioned in the House of Commons by Mr. Buxton, in 1821, that in the Presidency of Fort William, two thousand three hundred and sixty-

six widows destroyed themselves in the previous four years; and some of these were only twelve or thirteen years of age. One was only eight; and one only eleven was so obstinate, when she was not allowed to burn herself to death, that she fasted from food for four or five days; and although the local authorities prevented her from immolating herself on her husband's grave, she saved some of his bones in order that, when the first opportunity occurred, she might then destroy herself. Now such an act as this would be considered, in our country, as downright insanity;—it could scarcely arise from any thing else. You know that the ignorant have pronounced philosophers mad, over and over again. Democrates was pronounced mad, by the common people, because he dissected a body to investigate the causes of insanity; but Hippocrates told the people that they were mad, and not Democrates. In a case of this description, a jury, who were equally well informed persons with the philosopher, would have been the only people capable of determining the question. If you empannel a jury to determine the madness of a person, they should be equal or superior to him. If you take persons inferior to the person supposed to be mad, they, through their ignorance, may conceive him to be mad, when he is only a man of knowledge superior to themselves. If the matter, therefore, refer merely to *opinion*, there may be considerable difficulty as to the sanity or insanity of the individual; and no one who is not equal to the individual, or even superior to him, is capable of judging, and every allowance should be made for education, and for all external circumstances. If we take these precautions, we may disregard the complaint,—that "the madman was as much in his senses, as the rest of the world; but the majority was against him, and therefore he was placed in custody."

Supposing, however, that it is another form of insanity;—a propensity; and a propensity to murder; which propensity the patient cannot resist. Here the great difficulty is to ascertain whether this state is real or not;—whether (in case an act of murder has been committed) the individual could not have resisted the propensity;—whether he has been giving way to some vile feeling, or has been the victim of an irresistible passion. Now, in pronouncing a person who has committed a crime to be insane,—as having been unable to resist the temptation,—we must ascertain first whether there has been any motive or not. If any motive can be discovered, then you may be justified in saying that the individual is a culprit,—is not mad. There should, in the first place, have been an evident reason for it. Generally, however, where there is some irresistible feeling, there is, at the same time, some wrong notion. When persons have committed murder, from an instantaneous desire to destroy, they have generally had, at the same time, some wrong notion;—some imagination that it was a voice from Heaven that called them to commit the deed. Generally, but by no means always, where there is a deed committed, there is a wrong notion; so that we have less difficulty than we otherwise should have. In many of these cases, where there

has been no motive, the patient himself, as soon as the deed has been over, has actually declared that he had no motive; and has expressed the greatest remorse for what has been done. On other occasions they have declared they had no motive, but they have laughed at the deed;—considered it a matter of indifference;—not concealed it, but given themselves up to justice. In other cases, before the deed has been done, they have requested people to confine them, and prevent them from doing what their feelings prompted them to do. They have been known to implore others to confine them, lest they should commit the deed which they have afterwards perpetrated.

To those who attend at all to phrenology, this is not only not wonderful, but considerable assistance may be derived from examining the shape of the head. The shape of the head does not shew a man to be mad; for a man with *one* shaped head, may go mad as well as a man with *another* shaped head. A stomach of *one* shape or size, will be subject to dyspepsia, the same as a stomach of another shape or size. It is absurd to suppose that, in insanity, there must be a particular shape of the head; but it is a general fact that, if a person have any one peculiar feeling of the mind, (which feeling phrenologists believe to be situated in a particular part of the brain), and the correspondent part of the head be correspondently largely developed, there can be no question that that strong feeling will take the lead of the other feelings. To put phrenology out of the question, when a person is born, whatever feeling or passion is remarkably predominant in the individual, so as to take the lead, if the other proportions of the brain be too small, such an individual is likely to go mad. Now if it be a fact that the brain, in different parts, corresponds with the natural intensity of the different feelings, then that part of the head may be expected in general to be proportionately large; and if you be told of an individual supposed to be mad, that he is the victim of a particular feeling, any one who attended to phrenology would certainly examine the head, and see whether there was a large development, corresponding with the passion which appeared irresistible; and if you found such a correspondence, that would be an additional reason for inclining to the belief, that the individual had been the victim of a feeling that was irresistible. This was shewn strikingly in the case of Bellingham, who murdered Mr. Perceval. Bellingham was a man of weak intellect; and you will see, in the cast of his head, that the anterior parts of the head are miserably developed; whereas the lateral parts (posterior and anterior) were largely developed; so that the man's passions were evidently much too strong for him to resist; and the passions particularly developed in him, were pride and destructiveness. That man was executed, because there was no proof at all that he was insane; but if any one look at his head, he would incline to a favourable opinion; and though he would not set him at large, to do such mischief again, yet he would not deprive him of life. He might still be in existence; but, at the same time, he should have it put out of his power to do any injury to his fellow-creatures. You will see a large development of pride

and destructiveness; and that part of the brain being large, has gained an ascendancy over the rest; and has been liable to excitement. You will find, in a great number of cases of insanity, that the character of the individual corresponds with the form of the head; and when the question is whether the deed has been done through violent passion,—by the force of an irresistible propensity, or whether the patient could control it, it may be of great use to examine the head. If you have *other* reasons to believe that the deed has been done irresistibly, it is an *additional* reason if you find the head peculiarly developed. The shape of the head is not to be depended upon *solely*; but to be taken into consideration, in conjunction with *other* circumstances.

Another circumstance to incline you to believe that the individual was insane is, if he have had an injury of the head. If a person have once sustained a real injury of the head, of course that organ is very likely to go wrong. If you find an incomplete organization;—if you have no ostensible reason for the act; but, on the contrary, have reason to believe that the man was the victim of irresistible impulse; and if you know that he has had an injury of the head formerly;—you would then be doubly inclined to the opinion of his being insane; and you would urge mercy to the judges, on account of the injury of the head. Another thing to be considered is, whether he has had a fit of apoplexy or of paralysis; for if he have, then you might suppose that the man's head was going wrong, when he committed the deed. Another circumstance will be the existence of insanity in his family. If you see an individual do a criminal act, and you have strong reason to believe that he did it through insanity,—although he may never have had an hallucination; yet if you find insanity in his family, you may conclude the insanity has descended to him. Nay, if you find that *no* injury of the head has ever existed; and if you find there has been *no* insanity in the family; yet if you find that this man was once insane on a former occasion, then you have strong reason to believe, that this very act was only the recurrence of insanity. Even though the previous attack may have been short,—though the person's peculiarity of mind have merely amounted to great eccentricity, yet if he have done an extraordinary criminal deed, you may then have strong reason to suppose, that it is to be set down to insanity as its cause.

These are circumstances that will assist your judgment, when a person has shewn no hallucination at all; but merely done a deed, which you suspect must be the result of insanity. In the first place, there should be no motive for the deed. Then it is to be considered, secondly, whether, at the moment he did it, the person *confessed* that he had no motive; and gave himself up to justice. In the next place, consider whether the patient may not have been quite *indifferent* to the deed;—had no motive, and was not aware that he had done any great injury. In the next place, whether the propensity to commit the act has come on in a paroxysm; and the patient has been aware of it, and wished to be confined. Then, if

there be an agreement of the head with the passion; then, if there be insanity in the family; or the individual have been previously insane; or there have been other diseases of the nervous system (such as apoplexy or paralysis);—in these circumstances, the individual is "mad," in the vulgar phrase; though he is not mad *legally*. In many of these cases, however, there is not such great difficulty; because you can easily make out the existence of some fancied motive. Some wrong idea has generally been observed.

Although it is quite necessary to prove that a man has been wrong in some of his notions;—either relating to facts present or past; or in some matters of opinion;—although it is necessary to prove that he is absolutely deranged on that one point, or that he is the victim of some one irresistible feeling, before we can say, *legally* speaking, that he is mad; yet *pathologically* we may say, that a great number of people who are at large, are mad. A great number of people at large have anything but a healthy state of the brain. They have one feeling too strong, or they have a ridiculous notion upon some point; but it is so slight, that it does not disqualify a person for carrying on the affairs of life; and therefore it is only said that such an one is "a strange fellow," or "an odd fellow;" and so he passes. Speaking *pathologically*, then, a large number of people, who go about, are more or less cracked; but *legally* speaking, in order to be accounted mad, a man ought certainly to have a mental power in a state of aberration from a healthy state, to such a degree as to disqualify him from conducting the ordinary business of life; or should be the victim of some strong feeling, which leads to the injury of others, or of himself.

If it be a mere matter of *opinion* on which a person is, pathologically speaking, mad;—as, for instance, that an individual has an unfounded fear of disease, and of death,—we call it merely *hypochondriasis*; and it does not justify us in calling him *mad*. If a man who has nothing the matter with him, is satisfied he is in a consumption, because he coughs twice a day; and because he spits a drachm of mucous in the twenty-four hours, is satisfied that he is rotten in the lungs, or full of abscesses, this is a morbid feeling; but as it would not lead to a criminal act, or to any act which is dangerous to others, we do not say he is *mad*. We only call the feeling hypochondriacal; but the *nature* of that feeling is exactly the same. Many such persons act, on different occasions, very absurdly. Some will not dress as other people dress; some will not eat as other people eat; and they will do a number of things more or less extravagant; but as the *degree* of extravagance is less,—and as they do no act which is injurious to others, we do not call them madmen; they merely pass as "eccentric individuals;" but some one in the family will carry his eccentricity to a higher pitch; and then it is necessary to shut him up. It is absolute madness. Unless the deeds done are criminally injurious to the individual himself, or to others, we have no right legally to say that the person is mad. Suppose he squanders all his money away;—not for the gratification of a parti-

cular feeling, but in a way which is quite contrary to what all other people do; or suppose he inflicts punishment upon himself, and attempts to murder himself or others, or commit depredations on the property of others;—we are not justified in saying, *legally*, that he is mad; although, *medically*, we are quite satisfied that he is in an unsound state.

But although it is necessary, when treating a person *alive* as a madman, to use all these precautions, and to be perfectly satisfied that the individual has done deeds not simply *injurious*, but *criminally* injurious to himself and others; yet, when a person is *dead*, we are allowed to incline to this opinion on much more general grounds, than we otherwise could. When a person is alive, of course it is a serious thing to treat him as a madman; and, whatever his eccentricities may be, we are not allowed to say that he is legally mad, unless he does things criminally injurious to himself or others. If he be guilty of such acts, we may be justified in saying he is mad. But, supposing he is dead,—supposing he has destroyed himself, then on the slightest grounds whatever,—if he have merely said a word or two of nonsense, we are allowed to say that he is legally mad. When a person has committed suicide, (which act cannot be committed again), then the least probability that the person was mad, is admitted by law. Where a person is alive, it is mercy which induces the law to compel us to give evident proof, before we say a man is mad; because it would be cruel to confine him without; but when a person is dead, it is necessary to prevent him from being treated as a self-murderer; and it is a mercy to make it appear, as much as possible, the result of a morbid state of mind. Therefore, when a person has committed suicide, we say that he is mad, on ten thousand times slighter ground than we can say so, if he be alive. There can be no doubt, in my opinion, that many criminals are not called mad, who really are so. I have no doubt that thousands, whose crimes were the result of insanity,—who were not responsible agents, have been executed unjustly; and that thousands more will be executed.

There may be extreme difficulty, sometimes, in ascertaining that an individual has any absurd belief at all; and there is a difficulty on the other side of the question, respecting this absurd belief. Occasionally, it is almost impossible to ascertain whether a man is mad; owing to the cunning of madmen. When persons are mad, they frequently have sufficient cunning to deceive any one, who is not thoroughly acquainted, not only with the habits of madmen in general, but with the belief of the particular individual. It requires very great skill, sometimes, to bring a person to speak on the point on which he is absurd.

I have mentioned the case of a man, who underwent a most severe examination without exposing his complaint; until asked by Dr. Batty (who knew the point on which he was insane) what had become of the princess, with whom he had corresponded in cherry juice. We have another instance too striking to be omitted. "I

well remember," says Lord Erskine, "that since the noble and learned Judge has presided in this court, I examined for the greater part of a day, in this very place, an unfortunate gentleman, who had indicted a most affectionate brother, together with a keeper of a madhouse at Hoxton, for having imprisoned him as a lunatic; while, according to his evidence, he was in his perfect senses. I was, unfortunately, not instructed in what his lunacy consisted, although my instructions left me no doubt of the *fact*; but not having the clue, he completely foiled me in every attempt to expose his infirmity. You may believe that I left no means unemployed, which long experience dictated; but without the smallest effect. The day was wasted; and the prosecutor, by the most affecting history of unmerited suffering, appeared to the judges and jury, and to a humane English audience, as the victim of the most wanton and barbarous oppression. At last Dr. Sims, who had been prevented by business from an earlier attendance, came into court. From Dr. Sims I soon learned, that the very man whom I had been above an hour examining, with every possible effort which counsel are so much in the habit of exerting, believed himself to be the Lord and Saviour of mankind;—not merely at the time of his confinement, (which was alone necessary for my defence), but during the whole time that he had been triumphing over every attempt to surprise him in the concealment of his disease. I then affected to lament the indecency of my ignorant examination; when he expressed his forgiveness; and said, with the utmost gravity and emphasis, in the face of the whole court,—'I am the Christ'; and so the cause ended."

You see, therefore, the extreme difficulty which you may sometimes meet with, in detecting the madness of an individual. You perceive that a very minute inquiry is necessary; and that sometimes no minuteness of inquiry will do, unless you are informed of the particular point on which the individual is deranged.

Besides the varities of insanity,—the variety of absurd notions;—besides the variety of degree, and of the absolute extent of this absurdity, (the person being absurd on *one* notion, or on *every* thing; from having little intellectual power left, or very little perception on a point);—besides the variety of the native characters of individuals, independently of their sanity or insanity; and the variety that must exist as to the *derangement* of feeling, as well as an *excess* or *defect* of feeling;—besides all these, there are many other circumstances which occur in insanity. The head, for example, is frequently hot;—both in the various paroxysms, and at the commencement of the disease. You will frequently observe the urine (both in the various paroxysms, and in the commencement of the disease) to be red; the pulse to be quick, full, and firm; the eyes and cheeks to be red; in fact, there is more or less of an inflammatory condition of the head. Then you will have pains, and all kinds of odd sensations in the head;—cracking, bursting, twitching pains of every description. You will hear insane persons speak of flashes of light, of double vision, of noises in their ears; and nothing is more common than deafness;—

deafness is the most common disturbance of the external senses in madmen. Sometimes there is a depravation of smell. They will fancy there is some intolerable stench around them; and they will speak out of their nose. I believe mad people are generally very fond of snuff. The integuments of the head, especially the posterior, superior parts, are often loose and spongy; so that if you gather up the scalp, you will find it fuller than usual, and loose. The breath is very offensive; and some say there is a peculiar smell of the body; so that you can smell a madman. Some, however, think it very hard that a person should be called mad, because he does not smell like a gentleman. The tongue is very frequently foul, and the mouth is filled with a viscid mucus; so that madmen are constantly endeavouring to spit it out. I presume there is a depraved habit, sometimes, of spitting about, and making things dirty; but, besides that, I have no doubt that the tenacity of the mucus is frequently a cause of it. It causes an unpleasantness, which the patient attempts to remove, by hawking and spitting. Some spit constantly in this disease, when it is not intense. I had a patient who was constantly insane; but who, about every fortnight or ten days, had a paroxysm. When he was in a moderately insane state, he spat nearly a pint a day; but as soon as an aggravation of the symptoms approached, he spat less; and as soon as the paroxysm was established, he never spat at all. Then, when it was declining, he began to spit again; and when it was over, he spat as profusely as ever. You will sometimes observe extreme hunger, and extreme thirst; but sometimes there is an absence of both hunger and thirst. The patient seems to have no desire for either food or drink. Costiveness is very common in the disease; and sometimes you observe great muscular strength; so that an exertion is made, far beyond what is possible in health. Sometimes insane people scarcely sleep at all. They will pass many days, perhaps weeks, without any sleep of consequence; sometimes without any sleep at all. Occasionally, too, there is a great resistance to external cold; but this is by no means universal; for many insane persons, through this notion, have been left to themselves; their extremities have mortified; and they have died. Now and then, however, there has been observed an extreme insensibility to cold; so that they have exposed themselves to frost and snow, without suffering from it in the least. There is apparently a great insensibility even of the external senses; but this principally arises from the abstraction of mind which, in general, is kept up within; so that the patient does not attend to what goes on around. Now and then the external senses, I presume, are diminished; for, as I just now stated, there is an extreme insensibility to cold, and frequently deafness. On the other hand, however, extreme *sensibility* has very often been noticed in the disease. Sometimes you will observe a sort of stupor; and this is not constant, but comes on occasionally. There are often various other diseases of the brain; such as epilepsy, paralysis, hysteria, and catalepsy.

Insanity sometimes begins suddenly; and this is particularly the case where the insanity relates to a propensity. Persons have sometimes suddenly been seized with an irresistible propensity. That form of insanity often begins suddenly; but in *other* forms, where there is an absurd notion, or where there is general delirium, it may also begin suddenly. For the most part, however, insanity is ushered in by an oddity of manner and behaviour. There is a great degree of loquacity noticed. Persons talk much more than they are accustomed to do; and will burst into foolish fits of laughter. On the other hand, they are sometimes observed to be very taciturn. On other occasions persons, before the disease, are observed to be extremely passionate;—in a different state as to temper to what they are accustomed to be; aad some, instead of being passionate, are sulky. Some are extremely civil. I have known such civility, that you would fancy the person was going to eat you. They will beg you to stop to dine, when you have dined already;—they will beg you to stop to supper; and then to take a bed. I have been astonished at them; and I have afterwards learned that these good people were in a madhouse. Frequently, too, there is a quickness of manner. There is no loquacity,—no civility; but a hurried way of doing every thing. Frequently there is observed a want of a proper attention to their affairs. They do not take the same interest in their affairs, that they did before. Again, this disturbance of feeling is frequently observed before the full formation of the disease. There is a want of affection to relations and friends; and, more or less, a change of general habits. These are the chief circumstances which precede the full establishment of the disease, when it does not come on suddenly.

With regard to the continuance of the disease, it will vary from a few weeks, to the rest of the individual's life. It very rarely, comparatively, occurs in children. The unsoundness of intellect in children, is generally *idiocy*. Children have very weak passions. They are very little influenced by external circumstances, before mixing with the world, and forming connexions; and of course their passions are little liable to be unfavourably excited; and they have much less intellect than adults; so that, altogether, they are much less subject to insanity. Still, however, children *may* be insane. Although their unsoundness is usually *idiocy*, in various degrees, yet occasionally they are *insane*. Dr. Haslam* gives a case of insanity in a child; and so does Mr. Greenwood. I think I have seen several instances of this; where it has been characterised by no delusion, but by very violent rage. Whether, when it begins in childhood, it continues for a long life, I do not know. I cannot say whether such individuals do, or do not die prematurely.

But although insanity may continue during the rest of the patient's life, it sometimes has remissions, and even *inter*missions. People are not only much less mad at one time, than at another; but some-

* See "Illustrations of Madness, by John Haslam, M.D.;" and his Treatise on "Unsoundness of Mind and Intellect."

times they are not mad at all. These intervals of sanity, are called *lucid intervals*; but, for the most part, a lucid interval is nothing more than the diminution of excitement. The patient is not less mad, but he is less violently excited than before; and therefore it is fancied that he is sound; but, in a great number of these cases, you have only to touch the string, and the madness shews itself again; —the patient being only more tranquil,—less evidently mad than before. The greatest caution is required in believing that a person is in a lucid interval;—that is, in believing that a person is in an intermission of the disease.

Occasionally the disease is not only intermittent, but periodical. I was once shewn, in a madhouse, an individual who was said to be deranged, for a certain time, every three years. I was applied to by a patient in 1814; and, as the case struck me, I made a particular note of it. He was forty-one years of age; and, five years before, a stone had struck him on the temple. The following and three subsequent years, in the month of March, he had paroxysms of laughing, yawning, stretching, and convulsions; the secretion of urine was sometimes copious, and sometimes scanty; there was great vivacity of spirits; he spoke and believed all sorts of absurdities; and his bowels became costive at that time, though at other times they were freely open. This was an instance of insanity. He was only mad in March;—the time at which *hares* are said to suffer derangement. The disease evidently arose from the blow inflicted on the temple, five years before.

The disease will sometimes intermit, alternately with other diseases. It has been observed to alternate with disease of the lungs. I was once, when a student, shewn a patient in Guy's Hospital, who died of phthisis. I understood that he had been previously deranged; and that as soon as derangement ceased, phthisis began; but *before* that he was considered phthisical. Whether he *was* in a state of phthisis, I cannot say. The stethescope was not used then, neither was the ear; but he was *considered* to be in a state of phthisis. He had pectoral symptoms; the insanity ceased; all the pectoral symptoms increased; and he died.

Insanity may exist for a long time, and then cease. Dr. Rush mentions a case of recovery after nine years; and he speaks of spontaneous cures after *eighteen* or *twenty* years. He only *speaks* of *them*; but, in one case, he *witnessed* recovery after *nine* years' duration. Very often, however, insanity terminates in fatuity; and when it so ends, the fatuity is called *dementia*. Idiocy, fatuity, and dementia (I mentioned) were in reality the same thing; but if idiocy come on in after life, it is called "fatuity;" and if fatuity be the consequence of insanity, it is called "dementia." But it is to be remembered, that if madmen live to be old—(and some live to be very old)—their mind, deranged as it is, must decline in the course of nature; —just as the minds of *sane* people decline;—just as *all* our minds will decline; and therefore one can hardly say that insanity has produced dementia; for the *insane* mind must fall into second child-

hood, exactly like the *sane* one. The disease, however, very frequently terminates, or is joined at last, by palsy; or perhaps by apoplexy; which proves fatal.

Madmen have lived to the age of eighty-seven. Mr. Tuke, in his account of the patients at the "Retreat," near York, says that there were eleven patients there, between sixty and seventy years of age; four, between seventy and eighty; and one had arrived at the age of eighty-seven; yet, upon the whole, there can be no doubt that insanity shortens life. If a person in insanity live to a great age, it is lucky (or unlucky) for him; but in a great number of instances, such persons do *not* live to be very old;—just as is the case in connate idiocy. Persons who have congenital idiocy, generally die before they arrive at the middle period of life.

When persons die of insanity, you, for the most part, find nothing sufficient to explain the symptoms. There is, perhaps, an appearance of disease in the head;—especially if the person die early, and you inspect him very soon after death. But it is to be remembered that, although frequently nothing is found to explain the symptoms, yet very few brains are dissected in a proper manner. Most persons run over an examination of the brain more quickly than any other part. It takes so much time to open the head, that the rest of the business, for the most part, is hurried over; and many who do examine the brain, are not qualified for such an examination. Notwithstanding all this, however, there can be no doubt that little or nothing is frequently found in the brain of insane persons;—just as is the case in the stomach, in dyspeptic people. If you open the stomach of a dyspeptic person, I will be bound to say that, in the greater number of cases, you could not tell the organ from that of other persons, who have died with an excellent digestive apparatus. After pure asthma, you cannot tell that the individual had been subject to the affection.

The foregoing, therefore, is no argument against the disease being an affection of the brain. A disease may be *corporeal*, and yet not be *structural*;—no affection of any organ may take place. It does not follow, because we say insanity is *corporeal*, that it is not a disease of the *mind*. We know nothing about that, except as to this world; and it is with this world that medical men have to do. It is a *corporeal* disease; but that does not imply that it must be a change of *structure*. A change of *function* may be quite sufficient. In diabetes, which destroys life, I have opened bodies over and over again; and have not seen any thing to shew me that the person had had organic disease. Again, you may conceive that this must take place, if you consider that individuals have been mad for years; and that, just before death, they have recovered completely. A lady of rank, in whose family there is insanity, told me, that her husband had been deranged for a great number of years; and at length he died; but just before death he recovered his senses. Dr. Marshall, who was formerly a teacher of Anatomy in London, mentions a case where recovery from insanity occurred a few hours before death. Now if

the disease had arisen from a *structural* affection of the brain,—if the brain had been so disorganized that it could not perform its functions, of course such an event would not have occurred before death.

But you have proof enough of there being cerebral affection, to say nothing of the occurrence of the disease itself; for the latter proves itself to be a cerebral affection, as much as dyspepsia proves itself to be a disease of the stomach. But you may have *anatomical* proof in these cases; for when the disease has continued long, you generally find some mark of disease in the head. You do not find anything to explain the insanity; but you find something that shews there has been suffering in the head. For example, there is often fluid in excess in the brain, or *upon* the brain; or the membranes of the brain are thicker than usual; or they are opaque; and the bones of the head are very frequently thickened likewise. The external table remains in its proper situation; but the diploe between the two is increased. A deposition takes place there, and the bones become thicker; and not only so, but sometimes they acquire an ivory hardness. Now insanity is not situated in the bones of the head; but when there is such thickening of the bones, and the *membranes* are thickened, and effusion is found in the membranes, it shews that the head has been suffering.

Gall mentions that, in many suicidists,—in fact, he says in *all*,—and frequently in great criminals, where there was no efficient reason for the action of which they had been guilty,—where criminals had been influenced by violent feelings only,—he found the bones dense and thick. Greeding mentions that, in two hundred and sixteen maniacs, he found the bones of the cranium very thick in one hundred and sixty-seven. In one hundred *furious* maniacs, he found in sixty-eight, that the bones of the cranium were very thick. Out of thirty imbecile individuals, he found the bones of the cranium very thick in twenty-two. Gall mentions another interesting fact; which is that, in the extreme old age of maniacs, the bones may grow thin again;—just as they do in sane individuals. You know that, in sane individuals, the bones become very thin in certain parts; and though in insanity you may have them thickened, yet they will become thin again;—exactly as in sane persons.

Besides these appearances, you may find various diseases in the brain itself; but you must not be surprised if, in cases which are not of long standing, you do not find any disease at all. If the case be of long standing, and you find the bones diseased, you may also find disease of other parts. I had a case,* which occurred in a woman who had a disposition to injure herself; and there was violent pain in each ear. She was deformed, and laboured under chronic bronchitis. She was placed near a window, caught cold, and died suddenly. After death, over each ear, there were found strong adhesions to the dura mater; and the brain itself, just over the part, was in a state of vascularity. In insanity you may find different parts of the brain more or less

* See the "Medical Gazette," Volume viii, Page 168.

inflamed; and you may find the appearances which inflammation more or less induces; such as thickening and softening and various organic affections;—just such as you would *à priori* expect.

I may mention, in connexion with this remark, that over the parts which are particularly excited, you will frequently find the temperature higher, than at other parts of the head. Nothing is more common than to find one part of the head hotter than another. If we have been studying for some hours, we feel the temperature of the forehead to be much hotter than it is either at the top, the back, or the sides of the head. So when persons' feelings are excited in insanity, you will find that a local increase of temperature is frequently induced. This remark has been made by those, who have more opportunity of observing the fact than myself.

With regard to the causes of insanity, of course they are *predisposing* and *exciting*;—just as is the case with other diseases. Among the *predisposing* causes, the most remarkable is hereditary predisposition. I should think there is no disease to which the human frame is subject, which can be so hereditary as insanity. When I say "disease," I mean *disposition* to the disease; because if a person do not have a disease break out till he is thirty, forty, fifty, sixty, or even seventy years of age, yet if the disposition to it be given to him by his parents and ancestors, we say it is hereditary. That is the ordinary mode of speaking; but some people object to this word "*hereditary*." I should suppose, however, that if a man inherit an estate from his father, even if he do not come into its possession till he is ninety years of age, it is just as hereditary as if he receive it the day he is born. It is a mere quibble to limit the word "*hereditary*." But insanity, in a large number of cases, is hereditary; and I do not think it is so difficult to wear out the hereditary disposition to any other disease, as it is that to insanity. It seems to require more of dilution,—more crossing of the breed, than any other affection; for it comes on even in the third and fourth cousins; and although it may have disappeared in one generation, it so frequently returns, that there is the greatest danger of its arising in almost every other descendant. Scrofula, gout, and various other complaints, will cease from good management, and in favourable circumstances; but as to the disposition to insanity, it is certainly one of the most undilutable (if I may use the expression) that can be imagined.

The importance of attending to the existence of insanity in families, has been very much dwelt upon by some writers; and I must confess that, if I were going to be married, there is no disease that I should be more anxious to inquire whether the family was free from, than this. Dr. Spurzheim, among others, has written on the subject; but it is just as well dwelt upon by Burton, in his "Anatomy of Melancholy," in his usual facetious and singular manner. He enumerates hereditary disposition among the causes of melancholia; and says—"*Parents a cause by propagation.*—That other inward inbred cause of melancholia, is our temperature, in

whole or part, which we receive from our parents. Such as the temperature of the father is, such is the son's; and look what disease the father had when he begot him, his son will have after him, and is as well inheritor of his infirmities as of his lands." He then enumerates a number of hereditary diseases, and proceeds to remark,—"Some other causes are given, which properly pertain, and do proceed from the mother. If she be over-dull, heavy, angry, peevish, discontented, and melancholy,—not only at the time of her conception, but even all the while she carries the child in her womb,—her son will be so likewise affected, and worse. If she grieve over much, be disquieted, or by any casualty be affrighted and terrified by some fearful object heard or seen, she endangers her child, and spoils the temperature of it, for the strange imagination of a woman works effectually upon her infant." He concludes thus:—"So many several ways are we plagued and punished for our fathers' defaults; insomuch that, as Fernelius truly saith,—'It is the greatest part of our felicity to be well-born; and it were happy for human kind, if only such parents as are sound of body and mind, should be suffered to marry.' An husbandman will sow none but the best and choicest seed upon his land; he will not rear a bull or an horse, except he be right shapen in all parts; or permit him to cover a mare, except he be well assured of his breed. We make choice of the best rams for our sheep; rear the neatest kine; and keep the best dogs. *Quanto id diligentius in procreandis liberis observandum.*—And how careful, then, should we be in begetting of our children! In former times, some countries have been so chary in this behalf,—so stern, that if a child were deformed in body or mind, they made him away. So did the Indians of old, by the relation of Curtius; and many other well-governed commonwealths, according to the discipline of those times. 'Heretofore, in Scotland,' saith Boethius, 'if any were visited with the falling sickness, madness, gout, leprosie, or any other such dangerous disease, which was likely to be propagated from the father to the son, he was instantly gelded; a woman kept from all company of men; and if by chance, having some such disease, she were found to be with child, she with her brood were buried alive.' And this was done for the common good; lest the whole nation should be injured or corrupted. A severe doom, you will say, and not to be used among Christians; yet more to be looked into than it is. For now, by our too much facility in this kind, in giving way for all to marry that will,—too much liberty and indulgence in tolerating all sorts, there is a vast confusion of hereditary diseases;—no family secure;—no man, almost, free from some grievous infirmity or other; when no choice is had, but still the eldest must marry, as so many stallions of the race. Or, if rich, be they fools or dizzards, lame or maimed, unable, intemperate, dissolute, exhaust through riot, as he said, *jure hereditario sapere jubentur;*—they must be wise and able by inheritance. It comes to pass that our generation is corrupt; we have many weak persons, both in body and mind; many feral

diseases raging amongst us; crazed families;—*parentes, peremptores;* our fathers bad, and we are like to be worse."

Now this is good advice; for though it is not to be carried to the unwarrantable pitch of gelding unfortunate people, yet undoubtedly this matter ought to be attended to much more than it is. I think it sin to marry a person in whose family there are many instances of insanity; and it is appalling to read the accounts of "deaf and dumb" charities, and "blind" charities; where you see that individuals have married; and have produced child after child deaf and dumb, or child after child blind. I think, when one or two children have been produced blind or deaf, that it is wickedness for procreation to be continued. You will sometimes see as many as six children born deaf or blind in the same family. I should think it would be desirable, in such circumstances, to ascertain, if possible, which of the family the disease arose from; and that divorce would then be very allowable; so that only one should be deprived of marriage-rites.

To shew you how very hereditary insanity is, I may mention that Dr. Burrows says, that six cases out of seven, in his private practice, were of an hereditary nature.* In the Salpétrière, there were three hundred and twenty female lunatics; one hundred and five of whom had the disease hereditarily. Out of two hundred and sixty-four cases treated by Esquirol in his private practice, one hundred and fifty were hereditary. Where insanity is hereditary, it is very common to see other members of the family, not deranged, but afflicted with some nervous disease or other. I know one family, where two or three are deranged. The father is not deranged; but he speaks badly, and has twitches of the face. Two other children of the family are sane; but have twitches of the face. Where one is insane, another is frequently a little odd in his manner, or odd in his thoughts; but not sufficiently so to be called deranged. Where there is insanity in a family, you will observe some individuals with very strong feelings; but not so strong as to overbalance the mind, so as to produce insanity. I believe I mentioned this circumstance before, when speaking of other diseases of the nervous system.

Among the frequent causes of insanity, are what are termed *moral* causes; consisting in violent excitement of the feelings; but these, for the most part, are innocuous, unless there be hereditary predisposition. A person will, in general, bear the most violent excitement from external circumstances, unless there be a predisposition to the disease. We every day see persons suffer the greatest reverses,—the most dreadful privations;—the severest bereavements of those who are dearest to them; so that they are overwhelmed for a time; but they are not ruined in mind for ever. There must be a certain weakness of mind, or a bad constitution of mind, or an ill-regulated state of mind, or a disposition to insanity in general, for these causes to take effect. At any rate, the mind may be so

* See his "Commentaries on the Causes, Symptoms, and Treatment of Insanity."

strong, and the faculties so well formed, and so well balanced, that the strongest moral causes will not upset the man. With regard to these causes, it is said that joy has excited insanity, even more frequently than grief. Human nature seems doomed to suffer. Most of us, every day of our lives, suffer something or other,—little or much; and human nature seems more capable of enduring grief than of bearing joy.

There can be no doubt, I think, that one predisposing cause to insanity, is a partial development of the brain. In many people who are deranged through the feelings, (which is the case with the greater part of deranged persons), certain parts of the brain are more developed than others; so as to be more than a match for the rest of the head; and they have suffered such a strong excitement, as to have overbalanced the powers of the mind. This you will see in a great number of cases. Where there is mental delusion, I believe, in most cases, it arises from some strong passion. When a man fancies himself an emperor, it is on account of the excessive development of the organ of "self-esteem." When a person fancies himself God Almighty, it is generally from the same circumstance. The delusion generally springs from excess of pride. When a person is convinced that a conspiracy is formed against him, —that attempts are made against his life every day, or that attempts are *meditated*,—when he believes things which have no reality whatever, and sees demons coming to injure or to destroy him;—it is generally from an over-excitement of the depressing passions. That is to say, his fear has got the better of his pride; and, being under the influence of fear, he afterwards becomes the subject of delusion.

With respect to *exciting* causes, there can be no doubt that long application to one particular point, is occasionally the cause of insanity. It was evidently intended by Providence, that we should employ all the faculties with which we are blessed;—not merely that we should use *one* arm, but *both*; not merely one *leg*, but both; not one *faculty of the mind*, but all in their turn; so as to strengthen the whole, and enjoy every feeling of the mind, as well as every intellectual faculty. If, then, a person dwell intensely upon one idea,—one point, so as not to employ the faculties of his mind at large, and employ all the feelings; if one only be engaged to the exclusion of the rest; so that ideas of *one* kind are not counterbalanced by ideas of *another*;—the person may at last persuade himself of any thing, and become mad. You cannot have a better illustration of this, than in Johnson's "Rasselas;" where, from a philosopher studying astronomy;—not hearing discourses on other subjects; not having his mind drawn to other topics; not enjoying one of the greatest delights in life,—conversation with his fellow-men; but shutting himself up, being abstracted on one point, namely, the motion of the heavenly bodies;—he at last became deranged, and fancied that he had the command of them. He was cured, you will recollect, by being taken into society again. That is a very good illustration of the fact I have advanced.

Insanity has frequently been excited by fever, and common inflammation of the brain. It has been excited by heat applied to the body at large; but particularly to the head. What is called *insolatio* has frequently made men mad. Mechanical injury (as you may readily imagine) has produced the same thing. An instance is mentioned of a foreign surgeon having trephined a man, for a large wound of the temporal bone; and when the wound was healed, the man could not refrain from stealing. He was an honest man before; but after the wound he had an irresistible desire to steal. The surgeon was satisfied that it was the result of disease; and got the man liberated from prison. He was more than an ordinary surgeon; —he was something of a philosopher. The people could not imagine how stealing was a disease; but the gentleman who had performed the operation, was convinced that it was; and by representing the case scientifically to others, he procured the liberation of the individual.

The puerperal state is, no doubt, one cause of insanity. You know that, during labour, women are subject to such an irritation of the head;—and of the spinal marrow, I presume; but at any rate of the head,—as to fall into insensibility and convulsions; and so puerperal women frequently become insane. They become so, in general, from the third or fourth day after delivery, up to the fourteenth or fifteenth; and, now and then, they will become insane during suckling. Dr. Gall says, that he knew four women who, in pregnancy only, had a desire to steal. They had a *local* or *partial* insanity; and not, as we usually see in the puerperal state,—a *general* insanity.

I think old age has a tendency to produce insanity; and there it is, in general, insanity of *feeling*. The intellectual faculties decline when we grow old; and the feelings frequently fall into a state of excitement. I have frequently seen old men, whose intellectual faculties have become much decayed, become exceedingly passionate, suspicious, and at last delirious;—totally unlike any thing they were before, and in such a state as I considered to be madness.

Excess of all kinds will induce this disease. Sexual indulgence is always enumerated among the causes of insanity; but very frequently, I have no doubt, excessive sexual indulgence, as well as improper indulgence, is the result of a morbid state of the brain itself. I have no doubt that a great many who indulge in sexual pleasures, beyond what is intended, (thinking of nothing else;—running riot every day), do so through a morbid excitement of the head;—a diseased state. They live in indolence; and not having any thing else to do, they select this as a good occupation. I have no doubt that many persons indulge in this way, till they go mad; but I am quite satisfied that that is not always the case; but that the state which ends in insanity, has originally produced a violent excitement in that particular direction.

The cessation of discharges will have the same effect. Persons have gone mad from the drying up of an ulcer or an issue; and the disease has sometimes arisen in the way of metastasis. When a

disease to which a person has been long accustomed, disappears, sometimes insanity will occur. I have seen it come on after gastrodynia; and it is said to have occurred, sometimes, after itch, and other diseases. It is merely a disease of the brain; and therefore persons afflicted with it are subject to all other affections. Diseases of the liver and intestines, will sometimes produce a sympathetic excitement of the head; so as to occasion insanity. Disease of other parts, on the other hand, will sometimes *impede* this disease.

I need not say that the devil has nothing to do with this disease, any more than any other; but you will find some physicians say, that the devil, or demons, are the cause of the disease. I may say they are not devils. The devil is a particular individual; but demons are supposed to be the spirits of departed persons. You will find, even in sound writers, an account of insanity being produced by the devil. Sauvages, the first writer on nosology, says that he really cannot agree with those German physicians who, one and all, say that persons possessed by the devil do wonders. Hoffman and Sauvages state, that signs are produced by demoniacal agency. One of these authors says, in the first place, that when a person is mad through demons, he has a demoniacal manner. He has not only heard them vociferate unusually loud, and make most unusual gestures, but perform wonderful and unusual motions of the body. In the second place, that these motions of the body (convulsions) came on suddenly, without any preceding disease. Thirdly, that such patients are very blasphemous; and look very much like the devil. Fourthly, that they have a knowledge of men; and reveal secret and particular objects faithfully. Fifthly, that they have a knowledge of unknown tongues;—not *foreign* tongues. To be conversant with *unknown* tongues, is much more clever than knowing *foreign* tongues. We should all be desirous to know the latter in this way; because it would save us the trouble of learning them. Sixthly, he says, that they have unusual strength; and, seventhly, that they vomit singular things;—such as hairs, pieces of flint, pins and needles, and things of that description; and that they not only discharge them from the stomach, but even sometimes from the eyes. When you see this, you may be quite sure a person is possessed of the devil. I believe I mentioned before, that physicians now have driven demons from the nosology; and Voltaire says, that the devil is always much mistaken when he addresses himself to doctors;—that we are the men who drive him out.

As to the general *diagnosis* of insanity, we have to distinguish it from phrenitis, from fever, and from delirium tremens. There can be no doubt that, in insanity, there frequently are signs of inflammation;—that there is pain and heat of the head; quickness of pulse; thirst; a dry and foul tongue; high-coloured urine; and a throbbing of the temples;—just as in delirium;—the delirium of inflammation. But in the first place, insanity is a *chronic* disease; whereas phrenitis and fever are not; and, in the next place, although there are these symptoms of inflammation of the brain in insanity, when it

first begins, (so that you may be in doubt as to whether it is phrenitis,—common inflammation,—or not), yet you have this criterion;—that the insanity is out of all proportion to the signs of inflammation. I know of no other mode of discerning the true nature of the case, when signs of inflammation are present, than this. In insanity you may have no signs of inflammation at all; so that you can have no doubt as to its not being a case of inflammation of the brain; but in insanity you frequently *have* signs of inflammation; but then, if the disease be what we call "insanity," the aberration of the mind, and the violence of the feelings, are out of all proportion to the inflammatory symptoms. The state of the brain may be much the same, and there may be something of quibbling in it; but the distinction is important; because, if there be decided inflammation of the brain, you may set to work according to the strength of the patient; and, by antiphlogistic measures, do great good; whereas, if the signs of insanity be out of all proportion to the signs of inflammation, and you think that it is a mere case of phrenitis, you will in general do great harm. Antiphlogistic measures are, generally, very useful in the *beginning* of insanity. They are very useful when there are more or less signs of inflammation. But if the signs of an aberration of mind, be out of proportion to the signs of inflammation, I believe you will do serious harm. Indeed, if you go boldly to work, and think that it is a case of inflammation, then frequently antiphlogistic measures will cause the patient to sink; or they will perpetuate the disease,—make it permanent. It is of importance to consider, whether the signs of inflammation, and the signs of insanity, are in proportion to each other. If the latter be only in proportion to the former, the case may be treated as inflammation.

Your diagnosis will be also assisted, by knowing whether the individual has ever been insane before; and whether there is insanity in his family; because, if these circumstances do exist, and if you think it is more than inflammation of the brain,—if you think that disturbance and inflammation are co-existent, and not one dependent upon the other,—then you must not have recourse to antiphlogistic measures. As to the delirium of fever, it is easily known, in general, from the peculiar hollowness of the eyes, the vomiting, the extreme loss of appetite, the pain of the loins, and so on. One cannot easily mistake a case of this description; and when delirium afterwards comes on, if it be violent, it is in proportion to the signs of inflammation; and if it be not violent,—if it be *muttering* delirium, then it is in proportion to the sinking of the patient, the fluttering state of the pulse, and the typhoid symptoms.

If it is of importance to know whether the disease is real or feigned. If it be feigned madness, people go to sleep. They cannot keep themselves awake; as madmen frequently do. Madmen frequently sleep regularly; but frequently they can do without sleep for a long time; but where the disease is feigned, persons cannot hold out. Neither can they desist from eating and drinking, as madmen frequently can; and the pulse is frequently not affected;—

at least if you can confine them, so that they cannot gain access to stimuli. Madmen will rave for days and weeks, without stopping; whereas a person who is feigning madness, generally thinks it necessary to rave violently, because he considers it an important feature of insanity; and the consequence is, he cannot continue it. Supposing, however, that the patient does not affect *mania*, (that is to say, *general* insanity, derangement on *all* points), but *monomania*,—attempting to be mad only on *one* point,—he generally overdoes it. It is impossible to convey, by words, an accurate idea of what we mean; but generally there is some over-acting, or some sort of inconsistency. They do not support the character well. They are not aware of all which they ought to do; and they do more than they should.

There is, therefore, I think, no difficulty in establishing the diagnosis; as to whether it is phrenitis, or fever, or insanity; or whether it is a case of feigned insanity or not. The difficulty is to ascertain whether a patient is *really* mad, when he pretends *not* to be so. The difficulty is not to prove cases of "morbi *simulati*;" but cases of "morbi *dissimulati*;"—not where the disease is pretended; but where the patient pretends not to have it. I formerly alluded to some cases, which shewed how cunning madmen were;—how necessary it is not to let them be aware when you are coming near the point;—to take them by surprise;—to ask them questions that will not make them suppose you are leading to the point; and to ask questions in a circuitous manner; so that they may be led to the main question, without being aware of it.

With regard to the *prognosis*, if there be hereditary tendency to the disease; or if there have been an injury of the head; or if there be a peculiar organization of the head; or if there have been previous attacks of the disease,—recovery is not the less probable, but relapse is the more probable. Such persons do not less easily recover than others; but when they *have* recovered, they may easily fall into the disease again. I believe that the prognosis is rendered more favourable by the individual, in whom the disease occurs, being neither very young, nor in an advanced life; but in the middle period of life. The more violent the exciting cause, the more favourable will be your prognosis; because, if the exciting cause be very slight,—if a small spark have excited a great flame, you may suppose that the person is strongly disposed to insanity; whereas, if the exciting cause be very violent, you may suppose that there was but little disposition to the disease; but that the violence of the cause was every thing.

Mania,—general excitement of the brain,—general delirium,—general violence of feeling, affords a more favourable prognosis than *monomania*. Mania is a general disturbance of the whole head; and it is more capable of correction than a fixed disturbance on one point. It appears to be more of the nature of an inflammatory state of the brain; and inflammation is more easily recovered from, than any thing locally fixed,—where the patient dwells upon some one particular point. Dementia, or that weakness of intellect which

follows insanity, affords the least favourable prognosis; for the brain is generally in such a state of inexcitability, that it seldom recovers its power. If a person have epilepsy, or other diseases of the nervous system, recovery is rare. The longer the disease has existed, the less chance is there of recovery; the more acute the disease, the more transient, in general, is it. With regard to those cases which occur in a puerperal state, recovery is more frequent than not. The prognosis may generally be given favourably, when the patient has fallen into the disease after delivery, or during suckling.

The *treatment*, like the *causes* of insanity, is generally divided into two kinds,—*moral* and *physical*; and the physical, again, are divided into two kinds;—first, *antiphlogistic* measures; and, in the next place, *soothing* measures.

When the case is recent, and there are phrenitic symptoms, the remedies for inflammation within the head are to be adopted, with more or less vigour; or when the case is *not* recent, but we have similar symptoms during any period of the disease, the same measures are to be more or less adopted. Generally speaking, however, antiphlogistic measures are not very admissible. When blood is taken away, it is found, in the greater number of cases, that it is neither buffy nor cupped; and the majority of cases treated actively, as phrenitis, do not turn out so well, as those in which such treatment is not adopted; or in which such treatment is adopted with very great moderation.

I have before mentioned that, in insanity, there may be no signs of phrenitis at all; or that if there be, still the mental aberration, and the mental excitement, are out of all proportion to the signs of inflammation which exist. I stated that the disease is not inflammation of the brain; for though there may be more or less of an inflammatory state, yet that does not explain the disease. It is a morbid state, not necessarily of an inflammatory nature; and that morbid state although frequently *connected* with inflammation, is unquestionably not *founded* upon it. In the beginning of the disease, however, very frequently a certain extent of blood-letting is proper; together with a certain degree of purging and ptyalism. For example, the exhibition of tartar emetic, in large doses,—so as to produce a state of nausea and depression of the system,—may be serviceable. But you must be guided, in the employment of these measures, by the state of the patient; by the recency of the occurrence; by the state of the constitution at large; and by the strength and character of the pulse. You must remember that, whatever signs of inflammation there may be, the disease is not necessarily of an inflammatory character; and that it is much the best to adopt moderate antiphlogistic measures, and such measures as will not greatly depress afterwards. Among these, the application of cold to the head is one of the best. The application of ice is often much more effective than bleeding; and it is not attended by such subsequent depressive effects as bleeding. I can lay down no rule for the adoption of antiphlogistic measures, except this;—that you must be very much on

your guard, and not trust too much to bleeding. When the disease has existed for any considerable time, if a fit of violence come on, it is very rarely to be treated by blood-letting; but you must apply cold; and remove, as much as possible, all stimuli.

However, we have sometimes a very different state from that of inflammation. Frequently there is great excitement of mind,—great aberration; but while the mind is in a state of high excitement, the pulse is of a weak character,—perhaps very rapid; and it is clear, from the whole state of the patient, that you must not adopt depressing measures; but that, on the other hand, stimulants and narcotics are the most useful. You will frequently see, in this disease, a state in which there is great irritation. There is a weakness of pulse, which easily proves to an experienced person, that the case is not of an inflammatory nature,—perhaps not the least so; but that it is a case of irritation. This is to be treated by cold;—in the form of ice, or cold water, or a shower-bath; and frequently by good nourishment and narcotics. Cold lessens the morbid irritability of every part of the body.

Now and then, both plans may be very moderately conjoined;—just as in the treatment of inflammation. But you frequently see maniacal patients in so great a state of excitement, that they will not bear more than the application of ice to the head and moderate purging; and you may find benefit by the administration of a certain portion of wine; or (what generally answers still better) a certain portion of porter, or good strong malt liquor of some other kind; together with nutritious food. As to narcotics, morphia has been found of late to answer much better, in a great number of cases, than opium. I have seen persons soon sent to sleep, in this state, by a large dose of camphor;—a scruple of camphor given every three or four hours.

It is necessary, not only at the *beginning* of the disease, but at its *crisis*, to prevent the patient from falling into an inflammatory state of the head; and, on the other hand, it is necessary to keep up the strength;—not to allow him to sink into a state of debility and irritation; and you will find moderate antiphlogistic measures the only ones to fulfil the former indication; and nutritious food, or even the moderate administration of stimuli, together with narcotics, very serviceable for the latter.

I need not say it is necessary, in all cases, to remedy any other disease that may be present. If you find costiveness, remedy it; if you find vomiting, remedy it; if you find chronic hepatitis, or disease of any other part of the body, get rid of it, if you can; for, in most instances, it will only exhaust the patient so much the sooner; and, in fact, irritation in *one* organ, frequently keeps up irritation in *another*. Now and then cases occur, in which mania is suspended by the production of another disease; but these instances are comparatively rare. If the new disease were but slight, (supposing, for example, it were only the itch), it might be well to let it run its course; but if there were any serious disease, I should consider it our

duty to cure it;—at any rate, to lessen it as much as possible; because the insanity itself could not do more mischief than it will.

Not only is it necessary to remedy any diseased state that may exist,—unless it be clearly beneficial to the mind, and at the same time clearly not injurious to the body,—but it is also necessary to support the health as much as possible;—to give the patient good air; to have him as much as possible in the fresh air; to observe the most perfect cleanliness; and to take care that all the food he has, shall be of the best quality. Warm and cold baths are found very useful; but it is in melancholia that warm baths answer best. The cold bath, in most cases of insanity, when patients glow after it, is an exceedingly useful measure; and in violent paroxysms a cold shower bath, continued till the patient is pretty nearly overpowered, has often a beneficial influence. As a means of remedy in chronic cases, also, the shower-bath is one of the best things that can be employed.

Speaking of the remedies for the purpose of subduing great violence, I may mention that the most violent fits of insanity,—the greatest paroxysms of rage, will cease in general for a time spontaneously. It was the custom of Pinel, the celebrated French physician, to let patients spend themselves;—to let them rave away; being certain that, after a time, they would be quiet again. Nature is exhausted after great excitement; for the latter cannot be carried on for a long time. But for the purpose of suppressing this violence, when it is too long continued, some practitioners have recommended a rotary machine; in which you set the patient upright, and spin him round as fast as possible, till he is sick and giddy, and reduced to quietness. In that way a maniac, like any body else, will be rendered pretty calm. It has been recommended to lay the patient horizontally, with his head at the centre, and to spin him round in that position; so that the blood might reach from the head to the centre of the body, by the centrifugal force. I have seen it put in practice in lunatic asylums abroad; where the patients spun round as fast as a tetotum; and, it is said, with the effect of quieting them.

The hot and the cold bath have been sometimes had recourse to together. If the patient be placed in the hot bath, and after a short time a stream of water be allowed to play on the head,—descending for about three feet, till the head be thoroughly cold,—it is said to be very beneficial. These are all various modes of effecting the same purpose.

With regard to *moral* management, very great good may be effected. The *medical* treatment is, for the most part, adopted for the purpose of lessening any urgent symptoms at the time; and for the purpose of preventing mischief; but with regard to curing the disease, I believe physical treatment, in the greater number of cases, is not very efficacious. We may do great good by means of it;—we may prevent an inflammatory state of the head; we may support the constitution; we may do great good by cooling the patient, procuring him sleep, maintaining his general health, removing diseases in other parts of the body, re-exciting a suppressed discharge, pre-

venting additional mischief, and lessening urgent symptoms. The *moral* treatment, however, is of the very highest importance.

In the first place, it is right to cultivate any faculties that are still sound. If patients be not *universally* insane, but have any mental faculties left in a state fit for occupation, it is exceedingly serviceable to employ them. If a patient have a taste for drawing, for music, for mechanical contrivances, or whatever else, that faculty should be cultivated. He should be allowed to make the best exertion he can with his intellect. A pleasurable occupation of this description, is exceedingly advantageous;—not only as contributing to the happiness and the comfort of the patient, but as withdrawing him from insane ideas. By this means persons have frequently had their insanity very easily subdued.

But it is also found, almost universally, that it is of great service to enjoin moderate exercise. A large number of maniacs, who have no intellect left for any pleasurable mental occupation; and many who, even while in their senses, knew not what intellectual delight was,—may still derive great pleasure, as well as great improvement of health, from bodily exercise. Nothing is found more useful, in the treatment of lunatics, than to give them things to do; and, more especially, to make them work in gardens; and occupy themselves continually, in the open air, with bodily exercise.

It has also been found of great use, not only to maintain activity of body, and cultivate those faculties of the mind which are still entire;—to make the most of what is left; but also to interest the feelings. This has been found particularly the case with females. You should give them animals to take care of; for the tender feelings are excited, and a constant interest is kept up, by having animals under their care. This has been found, in many instances, of very great use. Whatever their station in life may be, by giving them bodily exercise, you maintain the general health. You withdraw their attention from madness to reason; and, in some degree, create a pleasant state of mind. This may be done by mental occupation, as well as by bodily exercise. One great point is, to produce a pleasureable state of excitement; and in conformity with this, it is necessary to make them as happy, in all respects, as possible;—to treat them with the utmost kindness; never to have recourse to severity, except in urgent cases; and never to have recourse to harsh punishments, or to any thing which can border on cruelty. Nothing should be done which is calculated to irritate their mental or bodily feelings;—to inflict corporeal pain, or produce vexation of mind; unless the latter be absolutely necessary. No stripes, or corporeal punishment, ought ever to be adopted. Formerly, straps and bars were had recourse to, as a proper mode of treatment. Till modern times, the chief treatment of insanity consisted in cruelty. You find Celsus giving direction for the employment of the greatest severity towards lunatics. You will find that Meibomius (after whom the tarsal glands are named) says that Rhazes, an Arabian physician, orders that when persons labour under insanity,—"love-madness,"

and nothing else will do, he must be tied up, and then soundly thrashed, and beat well with the fists; and this again and again. "One swallow does not make a summer," and therefore, if one thrashing does not do, give the patient another. Another writer agrees with him, and says, "If the patient be a young man, let his posteriors be well flogged; and if he be not quiet then, put him into the bottom of a tower, with some bread and water, till he begs pardon for being mad, and becomes sane." Such were the ideas entertained, formerly, of the treatment of insanity.*

There should be the mildest restraint possible. Restraint is sometimes very necessary; because some patients are mischievous; and they will not only tear to pieces every thing they can, and do whatever mischief they can; but they will commit murder,—will murder themselves or others; and therefore restraint is necessary; but it should always be effected in the gentlest manner. I believe, at a lunatic asylum, where the greatest attention is employed, there the greatest gentleness is found admissible; for the more cruelly you behave to lunatics, the worse they are. It is in mismanaged lunatic asylums, that you have shouting and howling; and that every kind of trouble is experienced. Where the keepers of lunatic asylums are benevolent,—use no more restraint than is necessary; and especially use restraint in the least offensive manner; and where they take every admissible opportunity of being kind to the patients;—there you find the patients nearly all quiet; and a very small number indeed require coporeal restraint. If punishment be necessary for having done amiss, patients ought not to be flogged, but confined for a day;—as a child would be; and should be told that that is the punishment for having done amiss. It is certainly right to be firm in all this;—never to threaten punishment, and then not put it in execution. A maniac would soon find out this mistaken lenity; and take advantage of it. Whatever is threatened, should be put into execution;—provided a man threatens nothing but what he ought; so that maniacs may depend upon punishment, as a certain consequence of misconduct. But the utmost that is required in the way of punishment, is to deprive them for a little time, of any pleasure which they are accustomed to have, or to employ a little more restraint than usual.

There should be nothing about the individual, to remind him of the circumstances connected with his insanity. Hence, in most cases, it is found useful as a general rule, that the patient should be removed from his friends; for the circumstances connected with his insanity will, of course, present themselves, if the patient see his friends frequently, or remain in his own house. It is, for the most part, advantagious to take the patient away from his friends, and his own premises; in order that all associations connected with his insanity may be removed. In the next place, it is very necessary that there should be nothing dangerous allowed to be in the patient's

* This "love-madness" (observes Dr. Elliotson) is certainly the only case in which such treatment should be adopted;—if adopted at all.

reach;—no knives, or any instrument of which the patient might make a bad use. There are various degrees of insanity; and many patients may be trusted with things that might do harm; but, as a general rule, every thing with which he could do mischief, should be removed from a patient's reach. The windows should be well secured; and the patient should have no opportunity whatever of doing mischief; for lunatics are very sly. Bars, however, should be so placed before the window, as to look ornamental, rather than otherwise; and so as not to give the idea of a prison-house.

Still, although it is necessary to remove patients from their friends, yet when reason is returning, it has sometimes been found useful to gratify them with a sight of those they love the most. I know that exceptions to the rule of not allowing them to see their friends, are rare; but now and then that rule may be broken through, and great advantage be derived from such a breach of it. You will find a paper, by Dr. Gooch, published in the "Transactions of the College of Physicians," and likewise in one of his posthumous volumes, giving an account of a lady with puerperal insanity; in whom the gratification of seeing her husband, was apparently productive of good effects. It was an experiment; but Dr. Gooch satisfied himself that it was likely to be productive of benefit. It is a good general rule, not to be broken through without care; but the result, in Dr. Gooch's case, was very beneficial. A similar case occurred to me, three or four years ago, in a gentleman who had been deranged from moral causes. From great anxiety of mind, he was perfectly deranged; but his insanity subsided, and he told me that he should like to see his wife; for that it was very hard to be kept from seeing his wife and family. I found him still deranged; but I stopped with him two hours, and satisfied myself that it would do him good. He wished to leave his bed-room, and see different parts of the house. I took off his jacket, and led him down stairs, and gratified him by letting him see, first one part of the house, and then another. I watched the effects, and found it did not disturb him in the least;—did not throw him off his balance; but he seemed to gain intellect, and power over himself, as we proceeded. There were many little gratifications which he wished for, and which I let him have. One curious thing was to kill a *bantam cock*, which he saw from a window; and which appeared to him as a spectre, or a fiend. The colours, he said, had been terrific to him; and he should not be happy till it was killed. I gratified him with it; and he was exceedingly thankful. He killed it himself. I watched him carefully, for some time after this; and at last I satisfied myself, that the sight of his wife would not be dangerous. I might have been wrong; but it turned out that I was right. I brought her from a neighbour's house; and the interview was most affecting. From that moment he was perfectly in his senses, except for a few days when he was violently excited, and then he was found to ramble; but from that moment to this, he has been in his perfect

senses. This rule of separating a patient from his friends, therefore, although a very proper one, may be now and then transgressed; but it should not be broken without extreme caution. For the most part, when patients are insane, if their friends be about them, it increases the general excitement; and there is no chance of doing any good, till they are withdrawn.

The absence of all corporeal punishment,—of all cruelty,—of all severity,—of every thing which is calculated to irritate the patient, and the adoption of every thing that is mild, and gentle, and soothing, and calculated to excite their best feelings, and all their feelings in a pleasurable and satisfactory manner;—this will lead, very frequently, to the removal of the disease. But beyond this gradual, imperceptible good operation on the disease, moral treatment cannot be expected to go. You cannot expect, by moral treatment, to cure a madman at once.

You will, however, see a story of a person being cured in France, all at once, by moral means. A madman maintained the possibility of the miracle of St. Denis. The miracle was, that the saint kissed his own head; and this would have been impossible, I suppose, except by a miracle. A madman was maintaining that this was a fact; and said it was possible, because he had done so himself. Another madman inquired how he did it; and whether he kissed it with his heel?—and then he laughed at him. From that moment the man never spoke of it again. Now it is quite clear that the man must have been almost in his senses, to have seen the validity of any such reasoning. Another is said to have believed himself the Holy Ghost; and he had a neighbour in the madhouse, who also believed that he was the Holy Ghost; and as they were not far separated, they were brought to each other. The one inquired,—"Can there be two Holy Ghosts? You say *you* are the Holy Ghost; and *I* am the Holy Ghost;—can there be two Holy Ghosts?" The man got up and said,—"There cannot be two Holy Ghosts;—I must be wrong;" and he never called himself the Holy Ghost, from that day. But you must see, that when such an effect as this is produced, the person must be almost well. There was another man who fancied himself dead, and implored to be buried. He assured his attendants that he was quite dead; and he abstained from food, as a dead man ought to do; and was laid out, as dead men are. He was conveyed towards the church;—not inclosed in a coffin, but carried in a bed. His friends took care that some merry fellows should meet the funeral, at a certain part of the road. They asked who it was that was going to be buried; and the men who carried him replied, that it was a very bad fellow;—that the world had happily got rid of him. This so provoked the man, that he sat upright; and became so savage, that he jumped down to thrash them all. He was then taken home; sat down; ate a good dinner; and recovered from that moment. This is another instance of a man who was all but well at the moment. It is not for such pur-

poses as these, that moral treatment is to be adopted. It is possible you may do good in such cases as these; but, in general, such a result is not to be expected.

However, it is very necessary to have recourse to stratagem in many cases. There was another instance of a man who fancied himself dead, and would not eat; and there was a fear that he would die of starvation. The difficulty was how to get him to eat; and the following stratagem was adopted. Some people dressed themselves in shrouds, like corpses; and went into his room, which had been previously darkened. These people carried food with them, and ate of it freely; saying that they were dead, and the dead always ate well; and, as he wished to do every thing that became a gentleman who was dead, he thought he would eat too. It is said that he then fell asleep; and that when he awoke his fancy was gone. Another person would eat, but he would not be *seen* eating; and this is very common. Some madmen will not eat in the presence of any body; nor will they eat if they think any one will discover that they have been eating. A madman who had such a whim, had food given him; with a request that he would feed the cat with it. He was extremely hungry, and eat it very readily; and afterwards declared that he had given it to the cat, who swallowed it up all at once. It is frequently necessary to use a little stratagem, in cases of this kind.

One point is very necessary to be attended to. If you make insane people do what you wish;—if you make them do every thing with regularity, you have far less trouble with them, in the way of eating and drinking, sitting up, and going to stool. A certain hour should be fixed for all these purposes. Nothing is found more useful, in the treatment of insane persons, than to establish habits for every thing which you wish them to do. If a certain hour be established for going to the water closet, they will go as a matter of course, without ever thinking of staying away, and retaining the contents of their bowels; whereas, if there be no fixed time for it, you may have the greatest difficulty. So with respect to their food, and every thing else. You can, with the greatest facility, get them into the way of these things; provided all you wish them to do, is done at certain hours.

This is all that I think it necessary to say, on the treatment of insanity; and having now finished the contents of the cranium, I shall proceed downwards to the throat; beginning with the exterior (or nearly so), and proceeding to the interior;—going first down the air-passages into the lungs; and then speaking of their neighbour, the heart. I shall afterwards descend the œsophagus; and then go to diseases of the alimentary canal.

BRONCHOCELE.

The disease to which I shall next direct your attention, is situated in the neck, outside the air tubes;—in the gland called *thyroid*. This disease is called *bronchocele*; from βρογχος, *the windpipe*; and

the substantive of which we make so much use,—κηλη, *a tumor.* The French call it *goitre*; and it is supposed that this is a corruption of the Latin word "guttur," *the throat.*

The disease occasions a swelling in the front of the neck, in the situation of the thyroid gland;—a swelling produced, in fact, by an enlargement of that gland. No disease would be called *bronchocele*, although a swelling in the neck, unless it were the result of an enlargement of the thyroid gland. This tumour is, for the most part, soft; and neither painful nor tender. It is neither painful when left to itself, nor is it so when touched; and therefore it is not tender. Although it is usually soft in almost every part, yet occasionally you find it hard in some one part;—of a cartilaginous, and, indeed, sometimes of a bony hardness. It may attain a large size, or it may be very small;—it may, in fact, be merely a general fulness of the gland, or a slight general enlargement. Very frequently you find it enlarged chiefly, or almost entirely, in the centre, or on one side; and from being, at the beginning, a slight fulness of only one lobe of the thyroid gland, it may attain so enormous a size, as to hang down to the knees. Foderé, in his treatise on the disease, mentions an instance of a tumor which weighed seven or eight pounds; and Alibert (the writer whose representation of diseases of the skin I referred to) mentions a tumor, occurring in a man thirty-eight years of age, which reached to the middle of the chest, was as large as a pumpkin, and looked like a pelican's pouch. There is also one mentioned, as existing in a female upwards of sixty years of age. It extended from ear to ear; descended below the mammæ; impeded deglutition and respiration; and pressed on the meatus auditorius, so as to close it up. A German author mentions an instance of a goitre descending to the knees.

This disease affects females more frequently than males; and usually it does not begin before the individual has attained eight or ten years of age. There are, however, exceptions to this. In the "London Medical Repository," a physician mentions a child (in Derbyshire) who was born with a goitre of considerable size. At different times, when in Switzerland, I have made inquiry about it, of the country people and of my guides; and one old peasant told me, that he knew an infant who was born with a goitre; and I saw one myself in a little boy only four years of age. However, the answer I usually received was, that the disease seldom appeared before six years of age;—nearly agreeing with what is usually stated by authors. Authors state that, in general, it does not begin before the eighth or tenth year; and, indeed, I was told that not only bronchocele, but even cretinism (the idiocy of the country, which I formerly spoke of) did not begin in early childhood. Some of these people have a notion that a child has a goitre, or is a cretin, if either of the parents were drunk at the moment the little fellow was begot. This they told me; and wished me to believe it. They ascribe these diseases to that cause; though not in every case.

However, as the disease is certainly seen in children, and they are

sometimes born with it, and frequently the parents have goitres, it may be hereditary; but although both parents may have goitres, yet (just as we observe with respect to other diseases) it does not follow that the progeny must have goitres. A case has been mentioned to me of a goitrous father and mother, who had produced five children, all of whom were goitrous;—in a state of cretinism; and of another pair (both goitrous) who had four children with goitre; and one, twenty-two years of age, who was neither goitrous nor idiotic. In fact, he said she was tall and genteel,—*très gentille.* This disease very frequently accompanies cretinism. When you see an individual with a large head, an ace-of-spade nose, the eyes a mere slit, perhaps deaf and dumb, and imbecile, it is very common to see the thyroid gland enlarged,—to see bronchocele exist; and it is asserted that if people, both having goitres, marry, and one of their children having a goitre marry another with a goitre, that their offspring (constituting the third generation) are sure to be something worse than goitrous,—to be cretins,—to be idiotic. This is asserted; but I do not know its truth from any observations of my own. When the disease has begun, it usually increases; but occasionally it makes a stop;—does not, at a certain period of life, increase any more; and I have fancied that it has sometimes appeared to shrink in old age.

Bronchocele may destroy life, by pressure on the neighbouring parts; and Dr. Baillie says he saw one or two cases, in which death took place from pressure on the œsophagus and trachea. I have frequently seen it affect the voice; so that a person spoke in a hoarse, croaking tone, and with a sort of hissing sound;—such as is produced when the trachea is pressed. The disease is not entirely confined to the human subject; but cattle, also, and dogs have it. It is very common for it to be less during the winter, and to increase again during the summer. It is said usually to begin in one lobe only of the thyroid gland.

You will find its external appearance sometimes uniform and sometimes knotty; and on cutting into the tumor, you will find cells of all sizes, with contents of various consistency. Sometimes the contents are found gelatinous, and sometimes soft. Sometimes one particular part is cartilaginous, or even ossified; and you will see a quantity of calcareous matter. You will see a variety of appearances, in different parts of the same tumor. There is a representation of the disease in Dr. Baillie's work. Occasionally the tumor suppurates; and sometimes disappears spontaneously. I need not say that the blood-vessels of the part are found very much enlarged.

This is a disease which is seen in various parts of the globe; and in all latitudes,—hot and cold. It is seen in England, France, Spain, Switzerland, Germany, China, Tartary, Bengal, and the Island of Sumatra. Mungo Park says, that he saw it in the negroes of Barbary. It is seen in Spanish America; and, again, in North America. Some have ascribed it to the cold; but as it occurs among the negroes in Barbary, and also at Bengal, it cannot be owing to the

cold. Some have ascribed it to the snow-water; but there is no snow either in Barbary or Bengal; and, on the other hand, the disease is unknown in Greenland and Lapland, where there is little else than snow-water, and where the weather is very sharp. It appears, however, to be dependent in some measure upon the water; for the waters in the rivers and lakes of Switzerland are always bad, and are drunk only by the poor and ignorant; and those who drink them heartily are, for the most part, sure to have the disease. Those who are above the very lowest,—the most abject class, do not drink the waters either of the rivers or lakes; but the most ignorant people do. I have seen them drinking water the colour of ink. I had an intelligent guide in Switzerland, in 1826; and he told me that, beyond all doubt, this water produced it; but those who drank spring or snow-water, which did not run along a bed of lime, escaped; and nearly all escaped who drank cascade-water. He said that the bad water usually took about a year to produce the disease; but the instant the bad water in his neighbourhood was drunk by those unaccustomed to it, they found unpleasant effects. Sometimes, he said, these effects were prevented by putting a bit of ice or snow into it. Captain Franklin, in his "Journal of a Voyage to the Polar Sea," (which is situated at a great distance from Switzerland), makes an observation perfectly agreeing with the account which this man gave me. The captain says that, at Edmonton, on the banks of the Saskatchawan river, goitre is very common; that it is certain goitre affects only the drinkers of this water; and that, in its worst state, the disease is confined almost entirely to the half-breed women and children, who are always resident in the Fort, and make use of the river-water; which is drawn, in the winter, through a hole made in the ice; whereas the men, from being often from home on journies, and using snow-water, are less affected with goitre; and when they are at home in the winter, if signs of goitre come on, their annual summer visit to the coast presently cures them. He says the natives, who confine themselves to snow-water in the winter, or some of the small rivulets which flow through the plains in the summer, are exempt from the disease. A residence of one year at Edmonton, where the water is so bad, is sufficient to render a family bronchocelous. He says that many of the goitres acquire a large size; and that burnt sponge has been tried, and found to remove the disease; but that drinking the water again, renews it. A great proportion of the children who have goitres (he says) are born idiots, with large heads and other distinguishing marks of cretins; but he could not learn whether it was necessary that *both* parents should have goitres, in order to produce cretin children.

Another year that I was in Switzerland, passing along a valley near the lake of Valteline, the guide told me that, in one of the populous villages, there was no spring; and the inhabitants are therefore obliged to drink the water of the river; which is so bad, that goitre prevails there very much indeed. But, in another village, there are plenty of springs; and nobody there thinks of drink-

ing any water, except that from the springs; and no one there has goitre. He also added that, where there is much goitre, they are all Catholics; whereas in the village where there are plenty of springs, the inhabitants are Protestants. This is rather an important remark; because it is a very striking circumstance that, on many parts of the continent, the Protestant districts are much cleaner, and more healthy than the Catholic districts. More frequently than not, you can tell the Catholic districts, by merely looking round, and observing the state of the peasantry, without asking a single question. The Catholics spend so very much time in praying, that they are dirty in their persons, and negligent altogether;—not at all industrious; whereas the Protestants are very clean;—not spending so much time in church-exercises; and they are better off altogether. No one who has travelled, can doubt the truth of this remark; and in one of the villages alluded to, the people were much worse off than in the other. It is important to know this; because I shall have to mention, that the worse people are off, the more subject are they to the disease, when the causes of it are applied.

The nature of the water which produces this disease, is not well known; but, in all probability, it is mineral. I *presume* it to be so, as the water contains so much lime; but I will not *assert* it. Captain Franklin states, that those inhabitants who reside sixty miles nearer the source of the river than Edmonton, are said to be more severely affected than those at Edmonton; and he says goitre is unknown at a distance from the river, where nothing but snow-water is drunk for nine months in the year. He adds that, still farther from the source than Edmonton, where the water is still turbid, the disease is unknown. It certainly appears to be connected with the water, and seems to arise from some impregnation which the water has near its source, and which it loses as it goes along. At Edmonton, Captain Franklin tells us, the river is clear, except from the month of May to that of July; and that the distance from the rocks and mountains is one hundred and thirty miles. The neighbouring plain is alluvial, and the soil calcareous; with many fragments of magnesian limestone. In Switzerland the cause of the disease would not appear to be in the water at its source; for the springs and cascades do not produce it. On the contrary, it is the water that runs along beds, and is found in lakes, that appears to give rise to it. Persons on the mountains are rarely affected; and those who remove from the valleys and places where it prevails, to the mountains, find the tumor in some degree alleviated; and, after a great length of time, the disease has been known to cease altogether. The disease prevails much more in valleys with high mountains around them (such as you see in Switzerland) than elsewhere; and perhaps in those which are most exposed to the east and south winds.

Whatever may be the cause of the affection, it is found to prevail most where the air is worst;—where the mountains cause the air to be pent up, and where the persons are badly off. It prevails in a particular valley in Switzerland most frightfully; and there the

people are the worst off; for there you see more poverty and wretchedness, than in almost any other part. The inhabitants are dirty, and badly fed. In the countries where it is prevalent, the people have a dirty brown look, and appear withered; as if they were in premature old age. It seems that the causes which produce the disease, are those which poison the habit generally, and render it more liable to be affected by the causes of this particular disease. They have an aguish, or *malaria-kind* of look; yet you sometimes have it where there is no ague; and you have ague where you do not meet with this disease. Any circumstance which throws the body out of health, may predispose to this disease. The particular circumstance of the patient having a withered look, may not be immediately connected with bronchocele; but the causes of the withered look may impair the constitution, and render the person constantly liable to become goitrous. My own guide told me, that where the inhabitants were dirtiest, and the worst fed, they were most subject to the disease. Dr. Good says that it appears, in Derbyshire, among the poor only; —I suppose he means *chiefly*. He ascribes it to oat-cake; but the latter is eaten in other parts of England, with no such effect.

With regard to the *treatment* of the disease, the patient should certainly desist from drinking any water, which may be suspected to be the cause of it. Burnt sponge is unquestionably useful in it; and many practitioners say that they have seen cases cured by it. I presume there can be no doubt, that it possesses a remedial power over the disease; and some unite it with sulphur.

By far the most efficient remedy, however, is iodine; and it may be employed externally or internally. I have cured many cases of bronchocele,—some of them where the tumor was rather large,—with this remedy. It may be employed in the form of iodine itself; or it may be united with hydriodate of potassa; and that, perhaps, is the best way of administering it. With regard to the quantity, there is no rule for the dose; for it produces two effects,—constitutional and local. The constitutional effects are emaciation, morbid irritability of body, quickness of pulse, palpitation, and absorption of particular parts; more especially, it is said, those connected with the succeeding generation;—the mammæ of women, and the testes of men. It likewise takes away the appetite; and is more or less injurious to the body at large. But besides that, it is a very acrid substance; and therefore, like any other acrid substance taken into the stomach, it will produce vomiting and gastritis, and even ulceration; and when it passes the stomach, it may produce diarrhœa and more or less inflammation of the mucous membrane of the intestines. It affects the stomach and intestines immediately, simply as a corrosive agent; and this may arise in one person from a small quantity, though it will not occur in another from a *large* quantity. You never know, beforehand, the disposition of the patient in regard to it; and therefore it is always best to begin with a small dose. There can be no impropriety, as the disease is chronic, in delaying an efficient dose for some time. You may therefore begin with five minims

of the saturated tincture; and if no unpleasant effect be produced, it may be increased a drop every dose, or every *other* dose. I have gone so far as to give one hundred minims for every dose; but a great number of persons will not bear above twenty or thirty minims. Patients complain of heat of the stomach; but if you begin gradually, and inquire of the patient whether there is any burning sensation, or heat of the stomach, or any griping, you never need run the risk of doing mischief from its local effects. When a person begins to feel a dose (such as fifteen or twenty minims), I have been told that diarrhœa took place;—even griping and bleeding; owing to its being such a corrosive substance; and if a large quantity be taken into the stomach, the mucous membrane will soon be in a state of erosion.

As to the other salt,—hydriodate of potassa,—there is scarcely any rule for the dose; but it may be given in larger doses than the other. If you mix a drachm with an ounce of distilled water, you may begin with ten or fifteen minims, and increase the dose to a great amount. There were two or three men whom some gentlemen of my class saw at St. Thomas's Hospital, and who took two drachms of the salt at a time. There can be no doubt that the medicine was good; for Dr. Burton has analysed it very carefully. The article is often adulterated; and lime has been found in it; but care has been taken to have a good article; and that which these men took is known to be a pure salt. I also recollect a woman, who took one drachm for a dose, three times a day, diluted with ten or fifteen ounces of distilled water. There is no rule, for any dose of medicine, that is applicable to all cases. It has been thought by some, that it would be better to give iodine itself, and this salt together. Some persons always find fault with others who are energetic, or employ remedies in an efficient manner; but there is no reason because you are energetic, and employ medicines *efficiently*, that you should employ them *rashly*. There is no occasion to do a patient harm; and no occasion to run any risk.

With respect to the length of time during which the remedy may be taken, I have been obliged, in bronchocele, to give iodine a whole year, before the disease was cured. Seeing the disease was lessened, I persevered; and have gone on for twelve months; and, indeed, for more than that time. I think, in one case, I continued the remedy fourteen or sixteen months, before the disease went away. That was the largest case of bronchocele that I ever cured. I never saw any unpleasant constitutional effect; though no doubt such effects will occur, for they have been mentioned by authors; but I think if you see the patient frequently, and make proper inquiries at every visit, such unpleasant effects can hardly occur. Now and then, you may be taken by surprise with it; as is the case with every remedy. It may act suddenly. But in general, when a remedy *appears* to act suddenly, it has been continued some time after its effects have begun; and if it had been watched carefully, and left off the moment it commenced its action on the body, no such effects would have

ensued. In cases where a remedy has seemed to act suddenly, I cannot but think, with the exception of digitalis, that in the greater number of instances, it has began to act moderately, and has then been continued without diminution. Had it been omitted, the moment the effect began, the slight effect would gradually have ceased. I am not aware of ever having done mischief with iodine.

It is well to apply the remedy *externally*, as well as *internally*. You make an ointment by putting a drachm, or even two drachms of the hydriodate of potassa, to an ounce of lard. Of course the skin differs like the mucous membrane, and the constitution at large; and what produces merely an irritation in one part, will produce a diffused rash in another. It is well to use half a drachm, or a drachm at first, if the person have a fine skin; and then, if no ill effect be produced, you can increase it. It is absurd to apply it so as to irritate the skin. The patient cannot bear rubbing then; and if inflammation begin, it must go down before you can apply it again; and you lose so much time. We shall see, when I speak of diseases of the abdomen, how much good is effected in the same way as in bronchocele, by the exhibition of this medicine. It has been supposed that the good effects of burnt sponge, are to be ascribed to the iodine which sponge contains.

Besides burnt sponge and iodine, some recommend carbonate of soda; some, conium; and some, leeches. If the part fall into an inflammatory state, leeches may be useful; and if inflammation occur, the iodine should be suspended, and common antiphlogistic remedies resorted to, till the effect has ceased; and then it should be had recourse to again. Mercury, internally and externally, has been useful; and the two may be combined. I have seen the disease give way to the two; but I can hardly say how much good was ascribable to each. Pressure has been said to be useful; but it is awkward to make pressure, on account of the trachea and œsophagus. There can be no doubt that a seton, in this disease, is an efficient remedy. There are on record, very many cases of this disease which have yielded to a seton placed in the skin over the tumor.

The disease has been treated *surgically*, as well as *medically*. Some surgeons have tied the vessels of the tumor, with good effect; but this is a point on which I must not dwell. I have only to do with this disease as it is to be treated by medicine; but I may mention that Mr. Thomas Blizzard, formerly an able surgeon at the London Hospital, tied the vessels; but death took place from secondary hæmorrhage. However, in one week the tumor decreased in size one-third. Walther, the celebrated surgeon, tied the left inferior thyroideal artery; and the tumor diminished so much, that at the end of fourteen days he took up the right superior thyroideal artery. No inconvenience was felt; and the tumor speedily disappeared almost entirely. A surgeon in this country (Mr. Coates) tied the artery on the left side only; and cured the complaint. However, some surgeons have been bolder still; and Dr. Hedenus, of Dresden, (with whose son I was acquainted),

extirpated the gland in six cases; in one of which it was as large as a skittle-ball. The whole of the cases were successful. Foderé mentions the case of a barber who cut one away from his wife. This was a lucky hit, for he would probably kill the next woman on whom he operated. Two unsuccessful cases of extirpation are said to have occurred to Mr. Gooch. Dupuytren, the celebrated French surgeon, removed a tumor after having first tied the arteries. Only a few spoonsful of blood were lost; but the operation was very long. Much suffering took place; and the patient died in thirty hours. In several cases, the operation has been found so hazardous, and altogether so difficult, that the surgeon has been obliged to desist in the midst. Dessault is said to have removed half the gland with success. I find a note in "Frazer's Journal," stating that in no part of the world has the whole tumor been extirpated. There can, however, be no doubt of the fact; for persons have shewn that the tumor has been extirpated, by the scars in the neck left after the operation.

The chief treatment, however, is by means of iodine internally, and a seton. You are not to suppose that either of these will cure every case. I have seen the tumor so hard, that it was quite absurd to suppose any thing was capable of removing it. When it is cartilaginous, or ossified to a great extent, I should think it vain to give iodine, or apply a seton.

PAROTITIS.

The next disease of which I shall speak, is one situated in the glands in the neighbourhood of the thyroid; but a little higher. This is entirely a medical disease; and I believe the surgeon never applies his art to it. The last I spoke of is disputed territory;—surgeons take it, and physicians take it; but this (the mumps) is, I believe, strictly medical. As this is an inflammation of the parotid glands, it is called *parotitis*; or, in the language of Cullen, *cynanche parotidea*. It is right I should mention, that Dr. Cullen makes five kinds of cynanche*. The definition of the whole is "pyrexia, frequently of the typhoid type; redness and pain of the fauces; deglutition and respiration difficult, with a sense of constriction; narrowness in the throat." Now the first of the five kinds here mentioned, is inflammation of the parotid glands. I think it better to drop the word "*cynanche*;" and not consider the different parts of cynanche as varieties of one general affection; but I shall speak particularly of inflammation of the *parotids*, inflammation of the *tonsils*, and so on; and I presume that, in a few years, the word "*cynanche*" will be discontinued; and that we shall speak only of diseases of *one* part, or of *another*.

To speak of parotidea, or parotitis, or (in plain language) the mumps,—it is a swelling of one or both parotid glands; attended with an increase of heat in the part; extending to the submaxillary and

* This word has the curious derivation of κυων, *a dog*, and αγχω, *to strangle*; from dogs having been said to be subject to it.

sublingual glands; and affecting the rest of the salivary glands. The disease is attended by slight feverishness,—slight pyrexia; and lasts, in general, three or four days;—sometimes longer. It is sometimes followed by inflammation of the testicles, or breasts;—which some call *testitis* and *mammitis*. Certainly either is a much better name than *hernia humoralis*, which causes great confusion; because it has nothing to do with what we understand by "hernia." However, inflammation of the parotid or salivary glands, is sometimes followed by inflammation of the testes or breasts; and this is sometimes followed by phrenitis. When a testicle has been so inflamed, it frequently afterwards shrinks,—wastes away,—atrophies; and nothing is left but the membranes;—the tunica albuginea, and tunica vaginalis.

Parotitis occurs, usually, but once during life; and is said to be contagious. It certainly is sometimes sporadic;—you see single cases; but frequently it is epidemic. It prevails, in a boy's school, all at once throughout; and it prevails in several schools in the same neighbourhood, and many believe it to be contagious. I really do not know whether it is so or no. It occurs most frequently, from seven to fifteen years of age;—sometimes later. Now and then, you will see it in young men; but most frequently it occurs at the time I have stated.

There is nothing particular required for it in the way of treatment. You have only to apply moderate warmth, keep the patient quiet, make him abstain from ordinary nourishment and stimuli, give him a mild aperient; and the disease, for the most part, goes away after a time. It is very rarely that suppuration takes place. I have seen suppuration; but I presume it was an accidental circumstance,—from the inflammation extending to the cellular membrane. I should not recommend cold to be applied; because the disease has a tendency to metastasis. At least, when it ceases, the testicles and breasts are apt to be affected; and one would suppose that if you cause it to cease suddenly, there is a greater probability of such inflammation occurring.

As to inflammation of a testicle, that is not in itself a dangerous thing. It is only sharp and painful; yet it is thought to be a serious thing. I believe, however, there is no great harm if one testicle should be lost; for the other will do double work. But there is something more dangerous; and that is the liability to phrenitis. Phrenitis sometimes takes place, when inflammation of the testicle ceases. Sometimes the inflammation in the brain may occur at once, when the mumps cease; but, more frequently than not, inflammation of the breast or testicle occurs *first*, and *then* phrenitis supervenes.

If the case be severe, you must treat it more antiphlogistically still,—by means of leeches and purgatives; but, in general, nothing more is required than warmth and gentle aperients.

TONSILLITIS.

We now enter the air-passages; and the first disease of which I will speak is inflammation of the tonsils; called by Cullen *cynanche tonsillaris*, but frequently called by others *tonsillitis* (from "tonsillæ," *the tonsils*; and "itis," *inflammation*). The disease to which these names are given, is not an inflammation of the tonsils simply; for the surrounding parts are more or less affected. The velum pendulum palati and the uvula, as well as the tonsils,—one or both,—are red and swollen. The uvula is elongated, and its margins are translucent;—it becomes œdematous and swollen. If both tonsils be inflamed, on opening the patient's mouth you will see two large red balls, one on each side of the throat; which impede deglutition and speech. They may also be felt externally. When the tonsils are enlarged, people say "the almonds of the ears are down;" for the tonsils are called, in common language, "the almonds of the ears." Besides this swelling and redness, the secretion of the parts is altered; so that the mucus of the mouth is very tenacious,—slimy, as people say. There is frequently very great pain; for the inflammation affecting the tonsils is of a phlegmonous character; and the pain is sometimes very severe,—stabbing and shooting to the ear. Besides the shooting pain, there is necessarily great tenderness felt,—particularly on swallowing. Even the effort to swallow the saliva,—that is to say the mere effort of swallowing, without the presence of any firm substance to swallow,—gives pain; the motion of the part is productive of pain. You may see the disease sometimes on one side only, and sometimes only on the other; and it is said that the disease will shift from one tonsil to the other;—just as is sometimes seen in inflammation of the eye. When one eye gets better, the other will become inflamed; and a similar occurrence often takes place in the case of the tonsils; when one ceases to be inflamed, the other becomes so.

Sometimes, in addition to the inflammation producing redness, heat, swelling, and hardness, there is little ulceration;—there are specks of ulceration. Some persons, as soon as they have a sore throat, have specks of ulceration here and there, on the tonsils and uvula; with very little subjacent inflammation. Some persons have the mucous membrane inflamed alone. The inflammation is quite superficial;—without any inflammation of the subjacent cellular membrane, hardness, or enlargement. If the case be severe, there is a good deal of pyrexia. The pulse will become very quick in this disease, (as it sometimes will in acute rheumatism), without any danger whatever; and the tongue is frequently excessively foul;—I presume from the inflammation affecting it, as well as other parts. The foulness of the tongue is not at all in proportion to the danger of the disease; but I presume it arises, in a great measure, from the irritation being situated in that quarter of the body. The disease may terminate in resolution, as it is called; or it may terminate in suppuration. It is decidedly phlegmonous inflammation, so far as the

parts are concerned; and they very frequently suppurate; and when they do, the matter is found to be very offensive;—as offensive as if it were coming from a diseased bone.

The predisposing causes of the disease are, in the first place, a peculiar constitution, and disposition to it. There are some people who, in whatever way they may be exposed to the general causes of inflammation, continually get a sore throat. Whenever they are exposed to the vicissitudes of temperature, coldness, and moisture, they are sure to have inflammation of the throat; and this will run in families, so as to be constitutional. It certainly is predisposed to by mercury. When persons have been much under the influence of mercury, they are very liable (as I formerly mentioned, when speaking of inflammation in general) to take cold from the vicissitudes of temperature; and the throat is certainly particularly liable to inflammation from this cause. The youthful period of life appears more liable to tonsillitis than old age; for we see far more cases of inflammatory sore-throat in the young, than in the old. Perhaps, among the predisposing causes, I might mention the season of the year;—spring. Cases of this description certainly occur (from cold and wet) more frequently in the spring, than at any other period of the year. The *exciting* causes of the disease are, especially, cold and wet;—whether applied to the body at large, or to the feet only. Cold applied in any way, is sufficient to produce the disease.

With regard to the *treatment*, it is rarely necessary to take blood from the arm; but leeches around the throat, are particularly useful. I do not know that it is necessary to apply them internally to the fauces. I think that, applied *externally*, they answer every purpose they can; and that a free application of leeches, is far superior to blistering. As a general rule, in the treatment of inflammation, we must be upon our guard never to let blistering take the place of the removal of blood. If the inflammation be at all severe, you only harass a patient (in any disease whatever) by blistering, if there be a necessity to take away blood; and, in this disease, blistering is a very painful remedy. A blister produces great anguish, when applied to the throat; and does not, by any means, answer so good a purpose as leeches;—the frequent application of leeches externally, under the lower jaw, followed by poultices. The application of poultices not only tends to encourage the bleeding, but is a constant fomentation;—a mode of relaxing the parts, and causing perspiration there. If the patient be too weak for you to apply leeches, a blister then will be proper; or, if you have applied leeches as much as you think advisable, and still it is requisite to do more before the disease can be controlled, then blisters may be used with advantage. It must be remembered, however, that when a patient can bear leeches, you will find them the most useful.

I have found great benefit, in this disease, from a mode of treatment perfectly analogous to what is practised, with so much success, in some cases of inflammation of the surface of the body, and subjacent cellular membrane. You know that, in erysipelas phlegmon-

oides, or any kind of erysipelas where there is extreme tension and hardness of the surface, incisions do great good. They set the surface at liberty;—allow it to gape; so that the tension is removed, and great benefit always ensues. Now I have adopted similar treatment, frequently, in inflammation of the tonsils; and with very great effect. It is sometimes very difficult to know, in the case of the tonsils, whether matter is formed or not; and I dare say many practitioners (I am sure it has occurred to me) have plunged a lancet into the tonsils, in the expectation of finding matter, when there was none. They sometimes become so exceedingly large, that it warrants a person in trying whether there is any matter or not. Sometimes, when there is matter, instead of being softened, the parts are so tense that you will not find any fluctuation; and sometimes they are swollen so much, that you would fancy there was fluid when there is not. Thus mistakes are made on both sides. But whether matter comes or not, great relief is experienced by plunging a lancet into one or two places. The part is always very tense; if you put in a lancet it gapes; and when there is a little bleeding, the patient (in most cases) is better for it. I have seen it afford far more relief than leeches; and I know, therefore, that it is a very good practice to put a lancet in, for the purpose of making an incision in the tonsils. If there be any matter there, its escape is desirable; but even if there be none, you generally find very great benefit.

For the purpose of purging, there is nothing so good as a large dose of calomel; because it may be mixed with sugar, and put on the tongue; when it slips down easily. It is wrong to give acrid purgatives, such as salts, which stimulate the parts as they go down; and it is wrong to give any thing bulky. Castor oil easily slips down. Some persons recommend vomiting, in this disease; and it certainly causes a great discharge of mucus from the pharynx and larynx, and all the surrounding parts; and frequently does good; but, frequently, it is a severe remedy. I believe the free application of leeches externally, an incision or two in the tonsils, and a good dose of calomel, will, for the most part, cure the disease. Gargles are pleasant to the patient, on account of the tenacity of the mucus. A sour gargle is very grateful; and so, sometimes, is the inhalation of the steam of hot water. This relaxes the parts, and is found very agreeable; but I have often seen patients derive the greatest comfort from ices.

As to starving and low diet, you need not *inculcate* it; for the patient cannot swallow any thing. As soon as ever you are satisfied there is fluctuation,—as soon as you feel the parts soft, or if the part has been inflamed some days, and continues large, it is always right to make a puncture. If you do not choose to make a puncture to lessen the inflammation, still it is right to do it on the probability of there being matter; not only as soon as you feel fluctuation, but when several days have elapsed, and the part is swollen. It is wrong to delay this operation; for it is quite harmless, and productive only of momentary pain.

Although this is the form of the disease which we see every day, yet we occasionally find this affection occurring with debility. It is chiefly in old people that it occurs in this latter form; and chiefly in people who have had frequent sore-throats. When the throat has been sore very often, the inflammation is not of an active kind, but follows the course of gonorrhœa. When people have had the latter affection very often, the active symptoms are less severe; and so it is in the throat. When persons have had many attacks of tonsillitis, the inflammation is generally less active; the parts are not of so bright a red; they are of a more *dingy* red; there is less pain; and the swelling is greater in proportion to the other symptoms. In such a case as this,—with such debility of constitution, the shortest way is to give stimulating gargles;—for instance, the decoction of seneka, with Cayenne pepper and brandy in it. If the patient be weak, you must give good food; and sometimes allow a little wine. The case may be (like any other inflammation) *active*, and to be treated as first pointed out; or it may be *passive*, and require only local astringents and stimulants. But sometimes the whole constitution is weak; and you have to support the patient with good food, and perhaps even wine.

It is when this disease occurs with *ulceration*, that treatment of this kind is most frequently required. Sometimes, when the disease occurs with ulceration, there is a great tendency to mortification. This is a case that must be treated on the principles I before mentioned;—good food, more wine, and perhaps quinine. But good food and wine, are among the best things; and you must also employ stimulating applications, together with stimulating gargles. In this case, too, the chlorides of soda and lime answer very well;—that is, when the patient simply requires a stimulating gargle.

It is not, however, in every case of inflammation, that you are to presume there is ulceration; but (as I mentioned when speaking of ulceration of other parts of the body) where there is ulceration, you must adopt the antiphlogistic regimen. Many cases of ulcers of the leg have I seen yield to antiphlogistic treatment, after all other means have failed; and so it is in ulceration of other parts of the body. You see the parts red, and there are signs of strength; and the shortest way to cure the ulceration is to bleed locally and generally, and put the antiphlogistic plan in force. Ulceration occurring in the throat, however, is most frequently of an opposite character. This ulceration of the throat is most frequently seen in scarlet fever; where it is called "cynanche *maligna*;" but ulceration of the throat frequently occurs without scarlet fever at all. In these circumstances, it is frequently necessary to inject stimulating gargles, several times a-day. One of the best applications is the acetate of copper made into a gargle. There are many good ones; but this is one of the best.

Chronic ulceration of the tonsils is also very common. It is, you know, one of the common effects of syphilis.

ENLARGEMENT OF THE TONSILS.

But, besides this, the disease itself (to say nothing of inflammation in other parts) is sometimes chronic; and it is then attended with permanent *enlargement of the tonsils.* This is more frequently seen in children than others. The tonsils, after they have been inflamed, remain hard,—fall into a state of chronic inflammation, induration, and enlargement;—from lymph, I presume, having been effused into the cellular membrane. There is no difficulty, in cases of this description, in making a diagnosis. If you fail to make it externally, you have only to make the patient open his mouth, and you see the disease. The best treatment is the moderate exhibition of calomel, so as slightly to affect the mouth; the use of iodine, internally or externally; and of hydriodate of potassa. Iodine, in both forms, has great power in dissolving and dissipating induration and enlargement. There can be no impropriety in combining both plans. If there be much tenderness, leeches are very proper.

Occasionally this enlargement is not the result of *active* inflammation, but takes place *slowly*; and friction with iodine, or hydriodate of potassa, or both, is a very good thing. Sometimes you will see cases, in which it is judged right to have recourse to surgery;—to extirpate the tonsils, or tie a ligature; but the greater number of cases do not require this, provided you treat them early and perseveringly by mercury, or iodine and hydriodate of potassa, both internally and externally.

FŒTID BREATH.

Speaking of diseases of the tonsils, I may mention that persons are sometimes consulted, on account of the patient having a fœtid breath; called, in vulgar language, *a smoky chimney.* It must be very annoying if people are married, or in the way of being married; and I have no doubt that it has frequently prevented that interesting ceremony from taking place.

Fœtid breath may arise from many causes. It may be accidental, from a person eating something nasty; which enters into the blood, and is poured forth from the vessels of the bronchia, till the blood gets rid of it all. If a person eat onions, it is not while they are in the *stomach* that the breath is fœtid; but when the odorous principle of the onions gets into the blood, it is poured forth from the bronchial membrane. The bronchial membrane is found, by physiological experiment, to be one of the great outlets by which the body gets rid of improper things taken into the blood; or, at least, of things foreign to the blood. Carious teeth, or a diseased bone, is likewise a cause of fœtid breath; but one very common cause is a depraved secretion of the tonsils. If you look into the mouths of these patients, you will frequently see the tonsils enlarged,—one or both; or, at any rate, you see them containing a cheesy matter. If this be pressed out with the handle of a spoon, the person's breath (for the time) is so much the less offensive. I should imagine

that stimulating the follicles to a greater secretion, would favour the escape of this stuff; and not allow it to accumulate there, and form these nauseous concretions; but the individual's breath itself may be offensive, independently of this stuff.

PUSTULES OF THE MOUTH.

You will repeatedly have children brought to you by their mothers, with pustules on the tongue, and lips, and inside the cheeks. I do not know that the disease has any specific name; but the tongue, the sides of the cheeks, and the lips, are elevated in consequence of the pustules; and the tongue is frequently much swollen, and just the colour that it is, when persons are much under the influence of mercury. From the swelling of the tongue, the quantity of mucus secreted, the saliva running out of the mouth, and the fœtid state of the breath, you would imagine, at first sight, that the child had taken mercury; but if you give calomel as a purgative in such a state, it does not increase the mischief, but answers well as a purgative. It is one of the best to give children.

I have found great benefit, in these cases, from the use of washes containing some astringent; but the best mode of giving it to the child, is to put a grain or two of sulphate of zinc (for example) into an ounce of syrup. The child has no objection to it; and it exercises a beneficial influence. The disease sometimes occurs to many children in one family; but whether it is contagious I do not know. The disease is described as common ulcers in the mouths of children; and they may last some time without any danger; but purgatives and local astringents are very useful. Whenever you have to apply an astringent to the mouth of a child, it is best to give it in syrup, instead of water.

APHTHÆ.

There is a disease that frequently affects the mouth, and neighbouring parts; and usually in the period of infancy. It is called the *thrush*; or, in medical language, *aphthæ* (from *απτω, to set on fire*). It is always mentioned under diseases of the skin; but as it occurs in the mouth and throat, it is perhaps hardly right to call it a cutaneous disease;—it is a disease of the mucous membrane. It consists in the formation of vesicles within the mouth and lips, and all the way along the cheeks, the tongue, and the velum pendulum palati; and even on the mucous membrane of the hard palate, the tonsils, and pharynx. On opening the mouth, you see an appearance just as if the patient had been taking milk, curds and whey, or some chalk mixture;—all the vesicles are exceedingly white. This is produced by innumerable elevations of the cuticle, by a fluid, and a large number of minute vesicles. There is sometimes a good deal of inflammation with it; and sometimes you will see scarcely any thing more than this white appearance, as if the parts were filled with curd.

This disease certainly is most common in infants; but you will

frequently see it in adults, at the end of chronic diseases;—at the end of phthisis, for instance. It is very common then for persons to complain much of the throat;—to complain of a difficulty of swallowing; and even when persons die of diseases of the abdomen, of various sorts, it is very usual indeed to see aphthæ before death. It will occur in old people, from very trifling causes. It is supposed to be a fatal disease, when it occurs in old people; or in those in whom a chronic disease has existed for a long time; but it is not an invariable rule. I recollect an old lady of ninety. She was so old, that nobody thought of saying how old she was. She had been ninety so long, that nobody continued to add the odd years;—just as is the case with *horses*. Indeed she was the wonder of the village. At that advanced age she suffered an attack of bronchitis, and got well; and afterwards attained the age of one hundred;—how much more I cannot tell; but I know she lived ten years after the attack, notwithstanding it was united with aphthæ; and therefore aphthæ is not a fatal sign in old people. You see the disease every day, however, in persons who are dying of chronic diseases. I believe old women say, that you must have the thrush *first* or *last*;—that if you do not have it when you are *young*, you must have it when you are *old*. I only mention this to shew how common the disease is.

When the disease occurs in infants, it may be so slight as to require scarcely any treatment; but if it do, you find it useful to employ the warm bath, and attend to the bowels. There is frequently irritation of the mucous membrane lower down in the alimentary canal;—frequently sickness, and frequently diarrhœa; and therefore you sometimes find it useful, besides the warm bath, to have recourse to purgatives; and besides that, it is sometimes necessary to employ Hydrargyrum cum Cretâ, and opium. There is often tenderness on pressure; and then it is necessary to apply poultices over the abdomen, as a constant warm bath; and to apply a leech or two; but often a mustard-poultice answers best. A small portion of ipecacuanha, or camphor, is often serviceable; but nothing is better than a mild astringent in syrup;—such as I have mentioned already, (made with a minute quantity of sulphate of zinc). Many people employ borax and honey; and old women tie a rag to a stick, and mop out the child's mouth; and thus make things worse. They had better use a camel's-hair pencil; or leave the disease to pursue its course. I have no doubt that the chlorides are useful; but of course, in the case of children, they must be given very much diluted. In adults I do not know any means so useful as the chlorides. They will frequently change the appearance of the mouth almost immediately; but they require to be well diluted. The common solution must be diluted with six or eight times its weight of water. When the intestines have been in a state of irritation only, a few specks will appear at the rectum; and then old women consider that the disease has had a long journey, and has shewn itself at the other end. If, however, you look into the intestines, you find no inflammation, only specks; and it is only towards the anus, that

these specks appear. Nevertheless, the irritation which produced the vesicles, certainly does frequently extend all through the alimentary canal.

EAR ACHE.

Before I quit these parts, as we are so near the ear, (which communicates with them by the eustachian tube), I must direct your attention to what is commonly called the *ear-ache*. It is not, in general, an important disease; but sometimes it is of very great importance. You will recollect I mentioned, when speaking of inflammation of the brain, that the latter will spread from the ears and eyes. I have seen several cases of phrenitis, which have spread from the ear. Common ear-ache is not a thing so free from danger as tooth-ache. We see ear-ache every day; and think nothing of it when persons complain; but, in any case, it may be dangerous.

Ear-ache always arises from more or less inflammation in the meatus auditorius; and ought always to be attended to. Leeches should be applied externally, and blisters; and, in some cases, the patient should be bled in the arm. After it has lasted a long time, the bones frequently become carious; and when the bones are carious within, inflammation of the dura mater lying upon the petral portion of the temporal bone, is likely to come on; and then it is all over. After death, you will find matter formed within the ear itself; but you also find it formed upon the bone under the dura mater; and, perhaps *above* the dura mater,—in the arachnoid, and various other parts. Perhaps you find it on the pia mater, and other parts of the head. Encephaloid disease, and other affections, take place; the patient becomes delirious, and is soon gone. Therefore, when you see intense ear-ache, and the patient complains of pain in some other part besides the ear, and you observe a wandering of the eyes, it is well to tell the friends that he is in the greatest danger.

Of course such a case (like other cases of phrenitis) ought to be treated actively; but I believe, in almost every case, you will find all treatment unavailing. There is a local cause (that is to say, disease of the ear) keeping up inflammation of the part; and therefore you cannot expect to be successful.*

PHARYNGITIS.

There is also inflammation of another part of the throat, very far back, spoken of by Cullen; and I therefore legitimately touch upon it; namely, *pharyngitis*,—inflammation of the pharynx (from φερω, *to conduct*); or, as it is called by Cullen, "cynanche *pharyngea*."

Pharyngitis usually takes place from the mere spread of inflammation from the tonsils. When the tonsils are inflamed, it is very common for the inflammation to go farther back. Inflammation knows nothing of our artificial division of organs, and division of

* For the best account of Diseases of the Ear, the reader is referred to Kramer's Treatise; which has recently been translated by a young physician of great promise,—Dr. J. R. Bennett.

diseases; but away it goes along the mucous membrane; and the pharynx is continually becoming inflamed. Now and then, however, we have it in an *idiopathic* form; that is to say, it occurs as a distinct, separate disease;—not coming on with any other disease. I have myself seen one or two instances of it. When this inflammation exists, there is redness at the back of the throat. On looking into the mouth, you see the posterior part exceedingly red. Deglutition is very much impeded; but respiration is not at all difficult. At any rate, if there be any difficulty of respiration, it is slight. The voice is not affected, any more than respiration. It is the gullet that is affected; and therefore persons can speak and respire very well.

With regard to *treatment*, it is the same as that for inflammation of the tonsils; and therefore I shall not dwell upon it.

STRICTURE OF THE ŒSOPHAGUS.

We are frequently consulted upon a disease rather lower down than the pharynx. I refer to stricture in the œsophagus, producing obstruction.

In this disease there is, as in inflammation, a difficulty of deglutition; but then there is no sensation of heat in the part,—no soreness; and, for the most part, no pain. The difficulty of deglutition is chronic; and, for the most part, has come on very slowly. It is easily ascertained by the application of a bougie or probang; and this, I may say, is the only remedy; for medicine can do no good in stricture of the œsophagus. When patients come to you with a difficulty of swallowing, if you ascertain it is not in the throat, but a little lower down, and you find the stricture has come on slowly, it is right to pass an instrument down a certain distance. This being the case, you employ surgery, and surgery only.

But you will sometimes see this disease in a different form; and it is then entirely of a *spasmodic* nature. Frequently, when persons have not a *permanent* stricture of the œsophagus, they have occasionally a *spasmodic* stricture in the part;—just as they have in the urethra; so that it will be ten times worse at *one* time, than it is at *another*. This occurs more frequently in women than in other persons; and frequently it is connected with hysterical symptoms.

The best mode of treating it is, to use the shower-bath; to purge the patient well; and to use oil of turpentine, and other remedies of that kind. I have read of cases where it appeared to give way to mercury; but I have not seen them myself. It has always appeared to me, that they would do better with the common remedies of hysteria; by purging, on the one hand; and by lessening the irritability of the body at large, (by means of the shower-bath, the administration of iron, and putting the health generally into good order), on the other. But you must carefully remember, that the œsophagus is very liable to spasmodic stricture, without any danger at all.

LARYNGITIS.

I shall now proceed to consider inflammation of the commencement of the air-passages, properly so called;—inflammation of the larynx,—*laryngitis*. This disease is not mentioned by Cullen. He speaks of "cynanche *trachealis*;"—he speaks of the wind-pipe, and of croup; but not of this particular inflammation situated in the larynx. Indeed, so little was it formerly attended to, that when two or three physicians died of it, some years ago, it was considered almost a new disease; but on looking into old writers, you will find it well described. As you may suppose, inflammation of the larynx must have existed from the time that people had a larynx; and therefore this disease must have been known before.

In this affection, there is hoarseness or whispering; and, indeed, almost suppression of the voice. The breathing also is hoarse, loud, and rough. The inspirations which are taken are long. There is great dyspnœa; and, besides the constant dyspnœa, there are paroxysms of much greater dyspnœa, in which every muscle of the body comes into play; the eyes start; and the person looks as if he were being hung. These are spasmodic fits of difficulty of breathing; supervening, from time to time, on constant dyspnœa. Such is the state of the parts, that there is also frequent orthopnœa (from ορθος, *erect*; and πνοη, *breathing*);—that is to say, the person cannot breathe unless he be erect. From the great difficulty of breathing, the face is pale and ghastly; the lips are pale and livid;—not of a *purple* colour and livid; but *pale* and livid; and perhaps the face and throat are swollen. There is pain felt in the throat, exactly in the situation of the larynx; and if you press the larynx, you are sure to find it tender;—if you press the sides together, or press down upon it, you find it tender. Sometimes, but not always, there is redness and swelling of the face.

Sometimes there is swelling and redness of the fauces, of the velum pendulum palati, and uvula; and, indeed, of the tongue. Occasionally, cynanche tonsillaris co-exists with laryngitis. Indeed, it *frequently* does so;—the inflammation commencing in the tonsils, and spreading into the larynx. The epiglottis is very often swollen. The epiglottis is a part of the larynx; so much a part that, in many anatomical books, it is enumerated with the cartilages of the larynx. Sometimes there is cough, but not always; and with the cough there is hoarseness; so that you will have the *voice* hoarse, the *breathing* hoarse, and the *cough* hoarse. Sometimes, too, there is difficulty in swallowing. In the function of deglutition, the larynx (you know) is raised and brought forward; and if a part of the larynx so much pressed upon be inflamed, of course there is a difficulty of deglutition;—*dysphagia*, as it is called (from δυς, *difficult*; and φαγω, *to eat*). There is also expectoration of viscid mucus. This you would suppose; for the inflammation being seated in a mucous membrane, will, of course, affect the secretion of that membrane. The tongue, likewise, is very foul; from the inflammation taking place in its neighbourhood.

These are the *local* signs; and they are those of inflammation;—redness, swelling, heat, and pain.

From the disturbed function, there are also *general* symptoms. There are thirst, heat, extreme restlessness, and great anxiety. The difficulty of breathing must occasion great restlessness, and extreme anxiety. The pulse is rapid; and there is at last a clammy sweat. The pupils, too, at last become dilated; and the patient keeps his mouth constantly open. The difficulty of breathing occasions, I presume, such an accumulation of blood in the head, that more or less compression exists; and the pupils consequently become dilated; and the patient, from the want of breath, opens his mouth, gasps, and makes an effort to take in all that he can.

This disease, when acute, lasts only about three or four days. Of course, I do not include the previous days, on which there may be cynanche tonsillaris; but from the time the larynx becomes actively inflamed, the duration is not, in general, more than three or four days. Death sometimes occurs very suddenly. A violent spasm takes place; and the patient is destroyed presently.

This is a disease which occurs almost always in adults. In children we have *croup*,—inflammation of the *wind-pipe*; but when inflammation of this violent kind attacks adults, it affects the tube higher up;—it affects the *larynx*; and it has, therefore, been called "the croup of *adults*." After death, we find the mucous membrane of the glottis, and of the posterior part of the epiglottis especially,—perhaps the mucous membrane of the whole of the larynx,—red, swollen, and œdematous;—swollen not merely as mucous membranes are when inflamed, but from effusion into the subjacent cellular membrane. The rima glottidis is found to be nearly closed; and this would appear to be the great source of dyspnœa;—the œdematous state of the parts, which produces nearly a closure of the rima glottidis.

Sometimes the disease proceeds so far as to cause an effusion of fibrin; so that notwithstanding the disease is an affection of the *mucous* membrane, fibrin is poured forth, just as we see in a *serous* membrane; and sometimes we find a quantity of pus;—or, at least, of puriform fluid. Occasionally the tonsils are not merely red, as I stated, but even ulcerated; and occasionally the pharynx and the trachea below, and even the bronchia, are also inflamed. You are therefore not to expect one uniform appearance in the disease. You will find the essence of it, in all cases, to be a violent inflammation of the larynx; and, in general, an œdematous state of the rima glottidis and the parts around; but frequently you will find inflammation higher up, about the tonsils and the velum pendulum palati;—perhaps, also, inflammation of the pharynx. With respect to the quality of the fluids, they will vary from thick mucus to puriform fluid, and even up to fibrin; but that which you particularly notice, is an œdematous state.

Now all these appearances are nothing more than you would expect before-hand. The œdematous state, which perhaps is fatal, is nothing more than what occurs when the cellular membrane is

inflamed in any other part of the body. When inflammation is situated near cellular membrane, it secretes abundantly. In violent inflammation of the skin, the cellular membrane secretes to a great extent; so that you have more or less œdema; and the same thing occurs here; but from the circumstance of the parts being air-passages, and the inflammation being in the narrowest part of the passage, it is often dangerous. The same occurrence, situated a little higher in the pharynx, produces only a trifling inconvenience.

The disease begins from a catarrh. The person has a common cold; and the latter generally arises from cold and wet. The application of cold alone will produce the disease; but it usually results from an union of the two, applied either to the throat or to the feet. A few days after exposure, the patient has great hoarseness; and then pain in the larynx comes on. Sometimes it does not arise from a common cold; but, as I have mentioned already, a pretty brisk inflammation of the tonsils takes place, and it spreads from them. Occasionally, too, it takes place suddenly; but I have seen it in the middle of a chronic disease. There is no part of the body which can be inflamed *chronically*, that may not become the seat of *acute* inflammation; and therefore this occurrence may take place in the throat. When there is a syphilitic sore-throat, or a chronic affection of any kind, patients may suddenly experience great difficulty of breathing, and be in the greatest danger from active acute laryngitis.

This is a disease in which, if in any, it is necessary to be most active in treatment. No trifling practice is admissible here. You cannot trust to nature; nor can you trust to *medical* measures alone;—for it is necessary (in cases which last any time, and which become very severe) to use the combined force of medicine and surgery. The first thing to be done is, undoubtedly, to bleed freely in the arm;—to make the patient faint, if you can; and then to cover the throat with leeches. I am taking it for granted that the patient is able to bear it. The disease may attack a person with syphilitic sore-throat; and he may be worn out with mercury and disease, so that you may not be able to bleed in the arm; but still, in most cases, I am satisfied it would be best to set the patient upright, and take as much blood as he can spare;—be it three, or four, or twenty, or thirty ounces; and to produce fainting, if possible. There can be no rule for the quantity; but it may be necessary to take thirty or forty ounces, and to apply from six to thirty leeches; according to the age and strength of the patient. After the leeches, a poultice for some time may be a good application; and then, after all, a blister, if you please; but not earlier.

In this disease mercury is recommended, even by those who do not ascribe any active power to mercury in general. It is of the highest importance to get the mouth tender as early as possible; and therefore you must not wait a couple of days for salivation to take place. You will find, in the "Medico-Chirurgical Transactions," a solitary case of the disease recorded, where ten grains of mercury were given every two or three hours, till ptyalism was produced;

and as soon as the patient began to spit, the affection ceased. I have treated many cases of the disease in this manner; and with the greatest success. In treating a case of this kind, it will not do to give a few grains of calomel night and morning; for the patient is in constant jeopardy; and you are never sure of his life, from hour to hour. It would be a good practice to rub in mercury on the extremities. If you exhibit mercury by the mouth, it is necessary to give it in large and repeated doses. I will not say any thing about the dose; because if you know that the patient is soon affected by mercury, a small quantity will do. I only state that it is necessary to get the mouth sore, in one way or other, as soon as you can.

If the patient be in great danger,—if his attacks of difficulty of breathing come on frequently, it will not be right even to wait for ptyalism; but it will be requisite to make an opening into the throat, so as to enable the patient to live till the mercury produces its effects. Bronchotomy is absolutely necessary, in many cases of this disease. By opening the air-passages below the part inflamed, instantaneous relief is afforded; and the patient will live so much the longer. This cannot have the effect of curing the disease, but it has the effect of enabling the patient to live longer;—to live, therefore, till you adopt other means to cure him. I have had (to speak as a pathologist) some very *beautiful* cases of this description; where the combined force of the two great divisions of the profession, has most decidedly saved the patient's life; but where neither would have done alone. A mere opening of the larynx will not cure the inflammation, and the patient may die before the mercury can have any effect; and, therefore, it is necessary to watch the patient constantly; and if the symptoms decidedly grow worse, the operation ought to be performed without delay. It is an operation which is by no means dangerous; it is one which, if properly performed, can do no harm. The dyspnœa arises, as I have said, from an œdematous state of the rima glottidis; and if you enable the patient to breathe notwithstanding that, as the inflammation subsides the œdema goes down. The paroxysms of difficulty of breathing, clearly arise from spasm; and if an opening be made below, so that the patient can breathe through it, the disease may occasion as much spasm above as it chooses; but your patient is safe.

You are aware that the least pressure in these parts, will occasion spasmodic difficulty of breathing. In the "Medico-Chirurgical Transactions," you will see a case described by Mr. Lawrence, of a person who had attacks of dyspnœa, which arose from the mere pressure of an aneurism of the arteria innominata. The aneurism slightly pressed on the trachea;—the pressure was as slight as it could be, to be pressure at all. The direct diminution of the trachea by the tumor, was found to be very inconsiderable; but it was sufficient to produce irritation, and to cause violent attacks of spasmodic dyspnœa.

But the inflammation itself,—to say nothing of this œdema and tension of the parts,—the inflammation of the membrane itself, will

throw the parts around into violent spasm;—just as you see the inflammation of the urethra and bladder. When inflammation exists about the larynx, the person is continually seized with a violent difficulty of breathing, without any pressure, but merely by the irritation; and many persons, without any inflammation about these parts deserving the name of laryngitis, will die in a moment. I have seen several cases of persons, who have been seized with a sudden difficulty of breathing, when they were supposed to have only a common sore-throat; some of whom have died in the course of three or four hours, and some in a minute. When inflammation exists in the fauces, and extends to the glottis, without descending to the larynx and producing laryngitis, the person may be seized with spasmodic difficulty of breathing, and die instantly. I saw a young man, about three years ago, who had been frightened in consequence of his mistress pulling him out of bed, where he was with a girl, one night. This made him nervous, and therefore liable to spasmodic diseases. He merely caught a common sore-throat, for which six leeches were applied; and while the ward was full of medical men, a violent spasm seized his throat, and he died instantly. Every thing was done for him that could be done; but he was quite dead. I have seen several patients with more decided inflammation than this, (but still not with inflammation deserving the name of laryngitis), who have died in a moment. When, therefore, there is laryngitis, you may well suppose how dangerous the case is; and how necessary it is to be active in the highest degree. Whenever a patient becomes very hoarse, and you hear his voice hissing (sibilous) through the larynx, and find the tube is tender on pressure, alarm should instantly be taken, and the disease treated actively;—although the patient may make no particular complaint himself; and although, on looking into the throat, you cannot discover any thing particular.

Morgagni and others have described this disease;—proving that it is nothing new to medical men; but from their being no "outward and visible sign," in some cases, it was called "angina *occulta*;" to distinguish it from common sore-throat, which they called "angina *manifesta*."

A much more common disease than this, however, is *chronic* laryngitis; an affection of which you will see many cases. This species of the disease is attended with a very hoarse cough, and likewise with a hoarseness of the voice; and sometimes the person, both when coughing and talking, appears almost to crow;—makes a sort of crowing sound. The alterations in the voice are very great. There is hoarseness, roughness, squeaking, and crowing; and sometimes it is nearly suppressed. The cough, too, varies in the same way. Sometimes it is very hoarse; and sometimes very shrill. The respiration in chronic laryngitis, is occasionally hissing; but not necessarily so. It is observed in *most* cases; but by no means in *all*. There is a copious discharge of mucus, and sometimes of pus. There is in all these cases, I believe,—at least I have always observed it,—pain on pressure. If the lungs be sound, you must

learn that chiefly by means of auscultation ;—by listening, and finding the sounds of the chest healthy ;—finding that there is no pectoriloquy. However, it is sometimes difficult, when the voice is nearly suppressed, to make up one's mind on the subject. Some say they can tell it as well when the voice is suppressed, as when it is not; but I confess I have not attained that perfection.

This disease may occasion great emaciation ; and from that circumstance, as well as on account of the discharge of mucus of a puriform character, patients may easily be supposed to be in a state of pulmonary consumption ; and it is a fact, that the disease does sometimes co-exist with phthisis pulmonalis. After death from this disease, we find the common results of chronic inflammation. The mucous membrane is frequently thickened,—frequently indurated, —frequently granulated ;—exceedingly rough, and containing numerous little cavities, if I may so call them. Frequently it is ulcerated. The same appearances very often extend along the trachea.

In the treatment of this *chronic* form of the disease, we are by no means so successful as in that of the *acute*. In fact, the treatment, for the most part, is very unsatisfactory. The best method you can adopt, is the repeated application of leeches, and subsequently of blisters. The internal exhibition of mercury, too, is of the greatest use. If the disease be a *scrofulous* inflammation, however, of course mercury will do no good, but rather make things worse. It is best, in almost all cases, to give it a fair trial ;—taking care not to hurt the constitution ; but to make the mouth moderately sore, and to keep it so ;—to treat it as a mere chronic inflammation. It will very frequently subside ; but far *more* frequently, I believe, the treatment is very unsatisfactory.

On account of the sufferings of the patient, and the harassing cough, it is often necessary to give narcotics, to procure sleep. Conium answers exceedingly well. Some have found relief from the inhalation of the fumes of tar; and others from the inhalation of chlorine ;—either by diffusing it through the apartment of the patient, or making him breathe through water in which a quantity of chlorine exists. But it is very necessary, in all these cases, not to push the matter to irritation. Tar-fumes, chlorine, and many of these things, will produce very great irritation, even in a small quantity; and therefore it is right always to begin by impregnating the water, or the apartment, very *moderately* ; and if it produce no irritation, then you may go on to a great extent.

Some have recommended, as internal medicines, copaiba and cubebs ; because they have done good in irritation of another mucous membrane. I have not been satisfied with these medicines ; but as they are recommended, I mention them. Some have recommended the application of lunar caustic. A solution of nitrate of silver is made, into which a sponge is dipped, and pressed down to the rima glottidis, so as to produce a new action there, and lessen the morbid sensibility ; with the hope that the same good change which is observed at the spot at which the nitrate of silver is applied, may

spread downwards. I have known this remedy employed; and, as you would imagine, fruitlessly; but if the disease were situated merely at the rima glottidis, good would be done by it. I have no experience of it myself; but I have seen cases, in which I understood it had been employed without any harm.

APHONIA.

It is right you should be aware that the voice is sometimes lost, or reduced to a mere whisper, without any inflammation,—without any œdema,—without any obstruction, as it would appear, of the parts. This affection, which is called *aphonia* (from *a privative*, and *φωνη, voice*), occurs chiefly in females; and is altogether what we call a "nervous" complaint. It occurs sometimes in boys as well as in girls; but it is chiefly an affection of women. I think it is easily made out. There is no tenderness of the larynx on pressure; there are other nervous symptoms in the body; and the person is weak and nervous altogether. Frequently there is no tenderness on pressure, and frequently no cough; or if there be cough, there is nothing else;—no pain with it;—no expectoration; and the disease frequently comes on suddenly, and goes off in the same manner. It has frequently come on in the course of a few minutes;—at any rate, in a day. It ceases, perhaps, as suddenly; and then comes on again.

This (as I before observed) is altogether a *nervous* affection of the part. There is no danger whatever; but sometimes a person loses his voice for many months; and I have heard of cases where they have lost it for years; and, from a sudden circumstance, without any apparent reason, the voice will return. I do not know any mode of treatment better than the shower-bath; and attention to the improvement of the general health, in every way you can.

CROUP.

Acute inflammation of a very violent description, when it attacks the larger portion of the air-tubes, is situated, for the most part, lower down in children than when it occurs in adults. That intense, violent, adhesive inflammation,—inflammation, at least, causing a portion of fibrin to be thrown out,—which attacks adults, usually affects the larynx; so that *laryngitis* is the disease of adults; and the disease of children, corresponding with this, is *croup*;—"cynanche *trachealis*," or more properly *tracheitis*. The latter term is the most simple; and every body knows what is meant by it. The disease has been called *angina trachealis*; because there is a quantity of lymph formed. In this country it is called *croup*; in the east, I understand, it is called *roop*; and perhaps it is so in other places.

This disease is marked by a rough, clanging, ringing cough;—a cough which gives you the idea of sound conveyed through a small brass pipe. Besides this cough, if the disease be severe, there is hissing (sibilous) respiration; but it is chiefly in the inspiration that it is heard. It is harsh, rough, shrill, or hissing;—there being various modifications. The voice, too, is either harsh, crowing, or nearly

suppressed. There is a difficulty of breathing; and this is felt particularly during inspiration. These are the most common symptoms. There is no difficulty in swallowing; no pain in the throat, except at the lowest part; no pain in the larynx (where there is always pain or tenderness in laryngitis); but in croup, at the lowest part of the throat, where the trachea exists, there is frequently pain on pressure. The expectoration is mucous; sometimes mixed with fibrin and shreds of lymph.

As this is a violent disease, there is violent pyrexia. During the first stage the face is flushed, the pulse is rapid, and there is great anxiety of countenance. Sometimes the peculiar clanging cough is heard for some days, before the child is ill enough to shew its complaint; so that many mothers have been surprised, on being told by a medical attendant, (who has accidentally been in the house, and heard this peculiar cough), that the child was in danger. The disease may last from twenty-four hours, to three or four days, or even *several* days; and the child may either die completely exhausted, or be suddenly cut off in a moment, by spasm. Just as *death* sometimes occurs suddenly, so does *amendment*. Generally, patients recover by *degrees*; but sometimes they recover very *rapidly*, —almost *suddenly*. When recovery is exceedingly slow, shreds of fibrin are perhaps spit up for several weeks.

On examination after death, we find, of course, redness of the trachea; and such is the intensity of the inflammation, that lymph lies upon the red membrane, sometimes forming a complete tube, and even extending into the bronchia. Besides this tube of lymph, which is so continually seen, we frequently observe a quantity of puriform, and even bloody fluid in the air tubes. There is a secretion not merely of fibrin, but likewise of puriform fluid;—exactly as occurs in a serous membrane. When you open an inflamed serous membrane, you always see lymph lying upon the affected part; but, besides that, you always see more or less turbid serum even so thick and yellow as to approach to pus; and sometimes there is pus. So in a mucous membrane, when it is inflamed very intensely, besides fibrin you see a quantity of thin fluid inclining more or less to pus; till at last you see actual pus. You also see a bloody fluid.

This disease occurs chiefly in children, between weaning and puberty. It is occasionally seen in infants at the breast; but more frequently not till they are weaned; and professor Home, of Edinburgh, says that the sooner children are weaned, the sooner they are liable to it. They have more experience at Leith than we have here; and observations, therefore, are more easily made than here. It chiefly affects those of a full habit of body.

The cause is undoubtedly, in almost every instance, cold and wet. It occurs, therefore, more frequently in winter and spring, than at other times; and if it occur in summer, it is generally when a damp evening has succeeded to a hot day. It is seen most frequently in a situation near the water side;—in fact, in all damp situations. It is more frequent, too, in northern than in southern

latitudes. It is sometimes epidemic;—that is to say, a great number of children, in particular seasons, are affected with it. You know that an endeavour has been made to pervert the word "*epidemic*" from its common original meaning;—"that which attacks people at large." In that sense you have a peculiar signification; so as to distinguish between *epidemic* and *contagious* diseases. But *contagious* diseases may be *epidemic*;—not from this cause or that; but merely because they extend temporarily over a whole district at once. But although this disease is frequently epidemic, I cannot believe that it is ever contagious;—at least, I have never been able to satisfy myself that such was the case. It certainly does often affect more than one in a family at once; but this may only arise from all the children in the family being exposed to the cause at the same time; and from another circumstance,—that there is a constant tendency to it; and therefore children in the same family, may be supposed liable to the same disease. Now and then, a peculiarly striking circumstance takes place; and we are inclined to believe that the disease must be contagious; but I think mistakes are frequently made in the case of croup. I will not say that it is *never* contagious, because I have not seen every circumstance that other people have; but, from what I have seen and read, I cannot persuade myself that it is contagious. It is a fact, that many children have it in the same neighbourhood; but then they have been visited with the same vicissitudes of atmosphere; and the occurrence may thus be explained. And when it occurs in the same family, this fact might explain it;—together with the additional circumstance, that all constitutions are predisposed to the same disease. I know, too, that several children in a family will have it, but at different times; and some of the children in a family will be sure to have it; and therefore I presume there is a constitutional tendency to it;—just the same as in inflammation of other parts. Professor Dupuy says, that it once occurred in dogs at Alfort; and that the same appearances were observed in them, as in human beings.

The treatment of this disease must be energetic and decided;—just as I stated was requisite in laryngitis. It would be right to bleed from the arm, or jugular vein, perhaps; and to apply a number of leeches over the throat. It is to be considered as an inflammatory disease, that must be treated briskly. I would make the same observation respecting leeches, that I have already done respecting other inflammatory diseases of the throat. I should prefer leeches to a blister, and general bleeding to local; but I should follow up general by local bleeding. After the leech bites had bled well, with the assistance of a poultice, I would repeat them, if necessary, and then apply a blister. There is extreme danger here; and therefore mercury should be given with the greatest freedom. Whatever disputes there are about mercury, you will find, that in acute hydrocephalus, in laryngitis, and tracheitis, mercury is of the highest importance. Children will bear a larger quantity of mercury, in proportion, than adults; and it would be right to give a child, every two or three hours, as much as it would bear without vomiting and

purging. This is a much better practice than the administration of emetics. Many cases will get well with emetics; but this will be successful in a larger number of instances. The warm bath is useful; but it is not of high importance; and, when the leeches have bled well, some have advised applying cold to the throat. I should think there can be no impropriety in it. Seeing the good effects of applying ice to the *heads* of children, there can be no impropriety in applying ice in a bladder to the *throat*; but I have no personal experience of it.

Some have recommended bronchotomy in this disease; but I believe it generally fails. Unfortunately there is frequently in this disease, besides laryngitis and tracheitis, inflammation lower down;—that is to say, the bronchial tubes, in their minute ramifications, are frequently affected at the same time; so that that portion of the disease will kill the patient, even although you subdue the inflammation of the trachea. Bronchotomy can only be a temporary measure. It may enable the patient to breathe well for the time; but of course it can have no effect upon the inflammation. If the disease were not so extensive, it might be beneficial, by giving you time to cure the affection; but, unfortunately, you frequently have inflammation of the trachea, larynx, and all the ramifications of the bronchia; so that it is hardly possible for the child to recover from such a mass of disease. However, bronchotomy has been tried in many cases, and failed; and I have myself employed it without success. You will find a number of cases mentioned, where it was of no use; though it appears occasionally to have been of service. You will find one instance (there may be more) recorded in the "Medico-Chirurgical Transactions," by Mr. Chevalier; who made an opening into the trachea; the consequence of which was the discharge of a quantity of viscid bloody fluid; and the patient speedily recovered. If, after the ordinary treatment of the disease,—free bleeding, mercury, blistering, the application of cold, and (if you choose) the administration of emetics,—if you cannot make the mouth more tender, or bleed any farther, and yet the child is dying,—it would be better, if the friends would allow it, to make an opening into the trachea; in order to give the patient a chance;—but, in a great number of cases, it is a very slender chance indeed. I would not do it till I had told the parents that the child would die *without* it, and would most likely die when it was *done*; for otherwise it would be said, that you had cut the child's throat, and killed it. It is a frightful thing to make an opening in the air-passages, unless you prepare the patients (or their friends) for it.

In America, they recommend a decoction of seneka in this disease. But this is a stimulating substance; and, if it does good, I cannot believe that it is the active inflammatory stage. When the inflammation is subsiding, and great secretion is going on, it may stimulate the parts and brace them up; but I have not been tempted to give the remedy in the active acute form of the disease.

This disease, however, occasionally takes place without any inflam-

mation; or, at least, any *important* inflammation. Children who have once had the croup, will frequently, on catching cold, have a crouping cough,—a little hoarseness; so as really to labour under the signs of croup; but you find, in such cases, that the pulse is not quickened, and that the child is not particularly ill. If a child have once had the croup, there is in general little fear from other attacks. If parts have been once inflamed, they soon fall into a state of inflammation again; but then it is not *active* inflammation; and sometimes the inflammation is scarcely perceptible;—the disease appearing to be merely spasmodic. I have known children have six or seven attacks of croup.

It is always safe, in these cases, to apply antiphlogistic treatment;—not vigorously, as in the first instance; but to put a number of leeches on the throat, and administer calomel once or twice a-day, and (if you choose) an emetic. These means generally dissipate the disease. I know that some patients neither require leeching nor purging; and you benefit them at once by an emetic. A slight inflammation has occurred; it has thrown the parts into a state of spasm; and an emetic will frequently cure it; but it is generally safer (unless you know that an emetic has cured the child before) to apply leeches to the throat, and give a dose or two of calomel. You are never sure that it is merely a spasm. You cannot tell that there is not some little inflammation; and you cannot tell that it is not increasing; and therefore it is the safest plan to begin with this treatment. If the child be not worse, but plays about, then the best thing is to give iron. Iron is a good thing to lessen morbid irritability in any part of the body. If there be inflammation it will do no good; but if there be mere morbid irritability, I know it is one of the best things. I shall have occasion to state that spasmodic cough, of a ringing character, yields most readily to iron. It is best not to begin with it; but to adopt antiphlogistic treatment for a day or two; and then you may give iron safely. You may give the carbonate in treacle; or the sulphate in sugar, or in tea. Children sometimes will not take it without these accompaniments.

ORGANIC AFFECTIONS OF THE LARYNX.

Besides simple inflammation of the larynx and trachea, these parts are subject to various organic diseases. The larynx is frequently in a state of ulceration; and not unfrequently there are excrescences upon it;—looking, to all appearance, like warts. They are the same as warts on the genitals. Sometimes scrofulous tubercles form there. Sometimes you have scrofulous abscesses formed in the cellular membrane; and sometimes you have cancer, and melanoid deposit.

As far as I know, in the greater number of cases, it is impossible during life to make a diagnosis between simple chronic inflammation of the larynx, and these organic changes. You find a person with tenderness of the larynx; you find him hoarse; you perhaps find his voice reduced to a whisper; you find him cough a great deal, and

the cough is ragged or shrill; you find him waste away, his pulse perhaps constantly quick; and you find tenderness;—shewing, altogether, that the larynx is diseased. But I confess, I am not able to distinguish between simple chronic inflammation of these parts, and ulceration, or the existence of excrescences, or the existence of various deposits. Others may be able to distinguish these cases; but I cannot.

In the commencement of such cases, I should recommend you to apply the remedies of chronic inflammation;—leeches over and over again; blisters afterwards, if you choose; a seton in the neighbourhood of the larynx; the exhibition of mercury; and narcotics to lessen the irritation. If these things do no good,—if you find the patient get worse, notwithstanding you are applying them vigorously; that the corporeal strength is decaying; and that the symptoms in the throat, so far from diminishing, are increasing,—then you may suspect there is organic disease; and you will generally be right. It is only in the latter stages of the disease, that any distinction can be made. When my remedies fail, I then begin to think there is organic disease.

Occasionally the larynx is ossified. Sometimes it becomes completely ossified; and deglutition is rendered very difficult. The larynx cannot move up and down; and the passage of the throat becomes so much diminished, that the patient can scarcely swallow; and, indeed, he dies of the disease.

ORGANIC AFFECTIONS OF THE TRACHEA.

The trachea, likewise, sometimes gradually becomes ossified; and all the various diseases that I mentioned under the head of organic affections (melanosis, scirrhus, cancer, and encephaloid disease) occur here. But more frequently we have thickening of the mucous membrane, induration, considerable excrescences, and scrofulous tumors; and then the common effects of inflammation;—ulceration; the formation of abscesses; and, finally, a carious state of the cartilages.

CATARRH.

The next disease to which I shall call your attention, is *catarrh*. This is a very slight inflammation of the larynx, trachea, bronchia, and the mucous membrane above these parts;—that portion called the *Schneiderian membrane* (from having been detected by Schneider); and the membrane of the frontal sinuses, and even the conjunctiva of the eyes. The inflammation, in this disease, is not by any means so intense, as that which occurs in laryngitis and tracheitis; for it is an instance of common inflammation of a mucous membrane. It is, in general, a very *slight* disease; but it extends through the whole tract, from the conjunctiva of the eyes;—running down the lachrymal canal; and not only affecting the membrane of the nostrils, but with them the frontal sinuses, the throat, the tongue, the larynx, the trachea, and bronchia. It is a very slight inflammation; but as it affects such an extent of surface, you will find dangerous symptoms more frequently than you are aware of. This, in medical language,

is called *catarrh* (from καταρρεω, *to flow down*); and, in common language, we call it "a cold."

There is a feeling, at the same time, of soreness throughout the body; and generally there is tenderness of the surface; which makes the person uneasy, if he press much upon any one part. There is stiffness, and an aching of the whole body; but it is chiefly felt in the back of the neck. There is likewise headache;—I presume, from the congestion in the frontal sinuses. Perhaps there may be more or less congestion within the head; but I should think that it arises chiefly from congestion of the frontal sinuses;—at least, that the former is inferior to the latter. There is likewise chilliness, and morbid heat. The patient is chilly, and creeps towards the fire; and yet if you touch him, he is hotter than he should be. If you make the observation yourself, you will find this to be the case; but there is great sensibility of the surface; so that the least breath of air blowing upon you, makes you cold. The mind also is affected. There is heaviness of the head;—sometimes amounting to stupor; so that people are quite stupid. From the state of the conjunctiva, there is freqnently stiffness and smarting of the eyes; and, from the irritation of the membrane within the nostrils, there is sneezing. There is, also, from the disturbance of the membrane, loss or impairment of smell, and apparently of taste. People tell you they can neither smell nor taste. I believe they can taste, although they cannot smell. Many things may be smelt as well as tasted; and these are tasted just as acutely as before. From the inflammation in the air-passages, the breath is hot; so that when you have a cold, if you expire the air from the lips, you find it hot; as though it came from a hot place. There is generally hoarseness, some cough, and a little soreness at the front of the chest. When the mucous membrane is inflamed, it is sore at the division of the trachea; and you find soreness in the situation of the larger branches of the bronchia.

All the parts that I have mentioned discharge more freely than in the healthy state. They are all covered with mucous membrane,—if the *conjunctiva* can be considered a mucous membrane; they are all in a state of slight inflammation; and therefore they are in a state of preternaturally increased discharge. The eyes "run" (called *lachrymation*); and there is a discharge from the nose (called in Latin *distillatio*; or, as we say, *catarrhus*). The discharge from the nose, is likewise called *coryza* (from καρα, *the head*; and ζεω, *to flow*).

At first, the secretion is limpid;—like drops of water from a rock. It is thin and transparent; but afterwards it grows more copious and thick. As the symptoms decline, the quantity of the secretion of course declines; and, as all the symptoms go away, there frequently arises a little inflammation about the mouth and nose, and an eruption; so that the common people make the observation, and say the cold is going, because there is a breaking out about the mouth. When the cold goes off, and the inflammation within ceases, it is

very common for slight inflammation of an herpetic character to take place about the mouth. During the existence of the disease, the tongue is white, the skin dry, and the urine red; and when all is declining, the urine has a lateritious sediment;—the common symptom of inflammation. There is also a loss of appetite. The stomach is much affected in this disease. People cannot eat; and sometimes there is also an affection of the mucous membrane down the œsophagus, and in the stomach. There is heat and pain there, and tenderness on pressure. The pulse during the disease is quick.

The affection has a disposition to begin above, and travel downwards; so that persons know very well which part of the mucous membrane is inflamed, at different times. When it is the mucous membrane of the frontal sinuses and nose, they say it is in the head; —they feel so heavy and stupid. Then that goes off, and they begin to cough. As it leaves the upper part, it generally increases in the lower; and then, after a tickling in the throat, and hoarseness, there is frequently pain down the front of the chest, and cough; and also more or less difficulty of breathing. After that the tickling of the throat is diminished. But though it travels downwards, it frequently mounts up again. Sometimes people are beset with it in all parts at once; but generally, if the disease be slight, you see it travel downwards; and if a person have a relapse, it will come again above; but then people say they have caught a fresh cold. The disease will last from twenty-four hours to some weeks; and sometimes it is the forerunner (as I stated before) of violent inflammation of the larynx, or of the bronchia. It is often the prelude to various active inflammatory diseases.

The common cause of this affection, is the application of cold,— especially when united with moisture, or when the body is overheated and perspiring; and more particularly when the cold is applied partially. Many persons have a common cold in a few minutes, if exposed to a draught; but they will bear exposure to the air without any such effect. Mere cold will cause it, without any subsequent application; because, when you sit in a room without a fire, when you ought to have one, the nose will begin to "run," before you go into a room with a fire. While you remain in the cold room, you begin to sneeze; and other symptoms of catarrh come on;—proving the action of the cold itself. Most probably the constriction of the skin being so great, the Schneiderian membrane passes into great activity. Change of residence appears to increase the susceptibility to the disease. Some susceptible people always take cold if they change their residence; and some will catch cold without leaving their beds.

The best mode of treatment, is to keep the body perfectly warm; —so as to get rid of the chilliness. It is usual to increase perspiration by wine and brandy, and other stimuli; but it is better to do it by caloric itself. The warm-bath, or a vapour-bath, is very good; and a local bath is also very proper; and when you are warm, plenty

of hot liquids, without any wine or brandy, are exceedingly useful. If you put wine and brandy into hot liquors, there will most likely be headache afterwards.

During this time a person loses his appetite; and therefore nature indicates that he should take but little food; and that little should be chiefly fluids, and of a weak nature. When a person has been ill for any length of time, one of the best modes of getting rid of the cold, is by perspiring through exercise. Exercise in the open air if possible; or good exercise, at any rate,—so as to produce considerable perspiration,—is one of the best remedies. But great care must be taken not to catch cold, when perspiration is induced; for if a person allow himself to cool suddenly, when he is hot, his last state will be worse than his first. Good brisk walking, or dumb bells, or battledore and shuttlecock, or skipping, are highly serviceable. The patient should be careful to keep himself warm afterwards; or he will catch cold upon cold, till the most serious effects are produced.

INFLUENZA.

Catarrh is sometimes epidemic; and then it goes by the name of *influenza*. We have numerous returns of this epidemic catarrh throughout Europe; and it is not confined to the human race; for horses, dogs, and cats, are all liable to it.

The symptoms are usually more severe than in common catarrh. When the disease is epidemic, it is not so slight as when sporadic. When epidemic, there is generally complete loss of appetite, great lassitude and debility, and a very severe cough. It will attack persons both *out* of doors and *in* doors indiscriminately; and also individuals at sea. Sometimes it affects every member of a family at once; and sometimes it affects them in succession. There was a very remarkable influenza in England, in the year 1782;—there having been one in the East Indies and China, in 1780. It appeared (as many epidemics do) to travel westward;—having made its first appearance in the east. Respecting that epidemic, it is mentioned that an East Indiaman (the Atlas) had its crew attacked, while sailing from Malacca to Canton; and when it arrived at the latter place, they found that the people had all had influenza there, about the same time that the crew had had it at sea. This was an argument against the disease being contagious; for if the people had it out at sea, and found, when they arrived at a distant part, that the inhabitants had had it about the same time, it shews that it must have been something atmospherical, and not anything communicated from man to man. There has been a great difference of opinion respecting the contagiousness of different epidemics of this kind. Some contend that this and that influenza is merely epidemic; and others, that it is epidemic through its contagious nature. We have had epidemics of this description, but I never saw any thing to make me believe that the disease was contagious; though I should be sorry to deny it merely because the cases that came under my

notice, did not appear to be contagious. You will find, in medical books, strong facts to shew that it is contagious; and then there are others, equally strong, tending to shew the contrary;—just as is the case with regard to cholera.

The epidemic influenza attacks people of all ages; but children less than others. Is is sometimes fatal to persons who have chronic disease of the chest. An influenza is sufficient to stir up inflammation, when it exists in any part of the body. When the disease is not epidemic, but sporadic, it lasts from a few days to a few weeks; and when it is strictly epidemic, it generally continues for a few months. What the cause of it is, I do not know.

BRONCHITIS.

When inflammation attacks the air-passages at large, and particularly those within the chest (the ramifications of the bronchia), and affects these latter very severely, the disease is termed *bronchitis*, (from *βρογχος* and *itis*);—inflammation of the bronchia.*

This is the most common kind of inflammation of the lungs. The far greater number of those who have what is called "inflammation of the lungs," have inflammation of the ramifications of the bronchia; so that there is nothing heard of now but *bronchitis*; whereas we formerly used to hear only of *pneumonia*, or *peripneumonia*. But since it has been ascertained that the inflammation which we every day see, resides in the mucous membrane of the bronchia, the term "inflammation of the lungs" has fallen into less frequent use; and we have instead the term "bronchitis." One portion of the substance of the lungs is made up of the bronchial tubes, and therefore the term "inflammation of the substance of the lungs" is very proper; because those tubes are an integral part of the lungs.

In this affection, which you see every day, the breathing is quick and shallow. To make up for the shallowness, the patient breathes quickly. If the patient breathe deeply, the mucous membrane is put upon the stretch so much, that it occasions great uneasiness. He is more comfortable when he takes a small quantity of air into the chest; but it must be accomplished more frequently than on ordinary occasions. There is frequently a sense of constriction of the chest, and of soreness about the larger bronchia. It is sometimes difficult for a patient to lie down; but in other cases he can do so perfectly well. There is every variation as to cough. In some persons you will see intense cough tearing them. If they even turn a little in bed, it shakes the bronchial membrane sufficiently to produce cough. Some cannot turn; some can scarcely lift their arms; —they cannot produce so slight a motion of the chest as that, without experiencing cough. In other patients the cough is by no

* We take this opportunity of observing, that "bronchia" is the *neuter plural*; and that there is no such word as "bronchiæ;" which we encounter a dozen times in a page of some works on pulmonary diseases. It puts us in mind of Dr. Graves's exposure of that classical Hospital, in which "Repetatur balnea" figures in the prescription-book.

means severe. If it be severe, people are confined to their bed; but if not, the motion produced by exercise makes the breathing more difficult.

From the first there is some expectoration. The mucous membrane cannot be so irritated, without secreting more than it should; and this expectoration may increase to a very great amount. If the inflammation become very severe, it diminishes again; but still the patient has more secretion than in health. If a person have a very active inflammation, the secretion diminishes; and then, when the disease declines, or degenerates into the passive or atonic form, the secretion may become immense. At first it is thin; but it soon becomes thick, and frequently of a very yellow colour,—so as to look almost like pus; only it is very glutinous; and, for the most part, swims in water. You may see it very black;—as black as if soot had been mixed with it; but there are various other shades;—blue, green, yellow, and white. This expectoration is not excessively tenacious. It is certainly viscid; but not so tenacious as when the air-cells are inflamed. In the latter case, the matter is so tenacious, that if a person spit into a vessel and turn it up, the expectorated matter will not run out, but will adhere to the sides.

From the violence of the cough, and the congestion, there is no longer a probability of the disease affecting the mucous membrane above. There is headache (and sometimes very violent headache) when the cough takes place. The headache is of that character, when it exists at all, that patients almost always describe it as "a *splitting* headache;" and sometimes there is drowsiness. There is great congestion in the head; and a more or less inflammatory state.

The pulse is accelerated. You may have it at 100; or even above that. As the inflammation affects a mucous membrane, the pulse is generally large and soft. It may be hard;—for there is a great variety in these things, but for the most part it is full, and rather soft; or, at any rate, not a *firm* pulse. There is not the softness of *debility*; but a pulse of no remarkable *power*. The skin is frequently dry; and, of course, the tongue is dry, and generally of a dirtyish white colour; and sometimes it is covered with a great deal of mucus. The skin, for the most part, is hot; and now and then you see persons sweat violently. The face too shews great congestion. General congestion probably takes place; for, in many cases, there is drowsiness and headache; and there is likewise redness and fulness of the face. At the moment of coughing, you see the veins of the temples and neck greatly distended, and the whole face become turgid. If the disease go from bad to worse, the patient cannot lie down at all. His face becomes livid, from the congestion. The lips become purple; and I have seen the face become really black;—of such a hue that I could not have believed it had been the result of bronchitis, if I had had it represented to me. It was as dark as when a patient has taken nitrate of silver, to a great amount; or where there has been a communication between the two ventricles of the

heart. The pulse, at last, becomes weaker and softer; and, at the very last, vermicular. The surface becomes blue; and both the forehead and chin are bedewed with a cold clammy perspiration. In this state of things, the expectoration becomes very scanty, or ceases altogether; not because it is not secreted, but because the patient is too weak to expectorate it; so that he may almost be said to be drowned inwardly by mucus. In cases which are left to themselves, or badly treated, it is said that dyspnœa comes on about the fifth or sixth day; and is followed by death.

If, on the other hand, improvement take place, the constriction is removed. The cough is not much diminished; but it does not hurt the patient as it did. There is copious expectoration. The pulse becomes slower and softer; without, however, becoming so soft as in health. The surface perspires; and the tongue becomes moist. Still, if the case be severe, there is a discharge of stuff which appears puriform. In other cases, the patient neither gets well nor dies; and then there is considerable expectoration. Still the pulse is kept up, and still it is hard. In consequence of the cough, he does not gain strength; but perhaps becomes more and more emaciated. He has night-sweats; and at the end of many months he may die, or get all but well; and then when he is exposed to a common cold, he may have difficulty of breathing, and more or less bronchitis; so that some persons who have been ill, will never be able to get through a winter without an attack of asthma;—that is, shortness of breathing.

Besides these symptoms, however, there are others which may be learned by the ear. If you listen to the chest of a healthy person, you hear at every inspiration and expiration a slight murmuring; and this is called the *respiratory murmur*. If you listen to the breathing of a child, you find it louder than in adults; so that it has derived the name of "*puerile* respiration," to distinguish it from the respiration of adults;—on account of the difference of sound with which it is accompanied. I believe this arises from the fact, that there are a greater number of air-cells in children, in proportion to the size of the lungs, than there are in adults. Now if the tubes through which the air passes, are altered in diameter, or if there are more contents in them than usual,—if instead of being only moistened, there be an *abundance* of mucus, and mucus of a different consistence to what it usually is,—you must suppose that there will be a difference of sound from that which is observed in health. As bronchitis is an inflammation of the inner surface of these tubes, you necessarily have a very different sound in this disease, from what there is in health. If you listen over the part that is inflamed, you hear, instead of the natural murmur, a sound both louder and rougher than usual; and if the inflammation be very great, you then have the sound so loud and rough, as to be a *snoring* sound;—as if some little animal were snoring. That is called the noise of "*sonorous* respiration," or "sonorous *rattle*." Some choose to use the Latin word *ronchus*; and some

say *râle*, and would not say *rattle* for the world, because it is not scientific. However, you have a rough snoring sound; something like the bass string of an instrument. Besides that, you frequently have a squeaking or shrill sound;—something like the chirping of a bird; and that is termed "*sibilous* rattle." It is frequently shrill, like the noise made by a grasshopper. One or both of these phenomena we constantly observe. Of course you do not hear them all over the chest; but only at those parts where the tubes are affected.

There is another peculiar circumstance in this affection; namely, that all at once, while you are listening, you will occasionally find the sound entirely cease; and, if you continue to listen, you hear it again as before; or if you make the person cough, you then hear the sound of respiration again. Now this is peculiar to this disease; and it arises, as is supposed, from a large tube becoming temporally obstructed by mucus;—so that its ramifications get no air; and, when the mucus be removed, the air enters as before. If you ever find the sound of respiration cease in a part, if you only make the patient cough, that is generally sufficient to dislodge the mucus, and the respiration returns. This is called by Laennec a pathognomonic sign of this disease.

If you strike over the chest, in old persons more especially, with the intervention of some solid body, you have a hollow sound. The sound is much increased if a piece of ivory be laid on the chest, instead of striking the bare chest. If you strike with a finger interposed, you have a loud sound; but a piece of ivory is one of the best things you can employ. When you have hydro-thorax, or a deposition in the lungs, of course if you strike the part, in lieu of a *hollow* you have a *dead* sound;—as if you struck the shoulder or thigh. In bronchitis the sound on percussion is not altered; if you strike over every part of the chest, you find it sound as in health. At the very moment at which you may cease to hear respiration at one part, if you strike that part you still hear a hollow sound; and for this reason;—although respiration is not going on, there is air there. There is no fluid collected, and no solidification of the lungs; but the air is there much as it is in health; and therefore, on striking, you have the natural hollow sound.

You have this *wheezing* (as we call these rattles in English), not only when the person is *speaking*, but in a much more marked degree when he is *coughing*. If you have a doubt about the nature of the disease,—as to whether it is bronchitis or not,—because you do not hear a wheezing in the chest,—such as sonorous or sibilous rattle —if you make the patient cough, you may then tell the nature of the case to a certainty. In coughing there is generally a more violent inspiration; and as soon as you produce that, it will have the desired effect. If you be not quite sure as to the nature of the complaint, therefore, it is always well to make the patient cough. You will also frequently find this disease at the back and root of the lungs, when

you will not find it anywhere else. In that situation, both in respiration and in coughing, sonorous and sibilous rattles are frequently heard, when they are heard nowhere else.

For the purpose of listening to the chest, in order to hear these things, some employ the naked ear; but it appears to me that it would be better to employ the intervention of a foreign substance, —of a piece of wood. I think if you only employ the ear, you cannot come on every part of the chest so frequently as you wish; and it is not so convenient. If the patient be a young lady, and you be a young gentleman, perhaps mamma will not be pleased at you laying your ear on the daughter's bosom; and if the patient be a greasy old fellow in the hospital, you would not like it. Upon the whole, therefore, I think it much better to employ a piece of wood. I do not think that persons who use the ear only, do so well as others. I have known such persons give extraordinary opinions; and a great many of them are not capable of saying which instrument is the best. When you listen to the sounds of respiration, it is always best to take out the plug; and it is advisable to have the hollow extremity placed on the chest; for the sound is much increased by it. There are instances in which you expect an excavation; and you must then put on the top. I need not say that, in most instances, persons can tell a case of bronchitis without this; but sometimes they cannot. Sometimes a patient will breathe quick, and the pulse will be quick; and yet you are at a loss to say what the disease is. Sometimes I have known it difficult to say whether the disease was in the chest or not; whereas, by listening to the chest, and making the patient breathe quickly and cough, the disease has been fairly made out. If you listen to the respiration, in a case where you suppose there is bronchitis, it is right to make the patient breathe as quick as you can; and you will then hear the sounds more distinctly; it causes still more full respiration. If you make him take a breath something between a common respiration and a cough, it answers very well. It is right to make him fetch a deep respiration every now and then.

With regard to the *treatment* of this disease, I shall not detain you five minutes; for the treatment is perfectly easy. You have only to bleed the patient well, and to follow it up by local bleeding. According to some, the latter answers better at the back, than at the front. I do not know that this is the case, but some say they have contrasted the two modes;—which is more than I have done. I have generally been contented with cupping at the front. Some say there is more advantage from cupping on each side of the spine; and others prefer the root of the lungs and the large vessels. I am quite sure that, in this disease, you will find mercury of the greatest use. I have had many cases that have yielded the moment the mouth has become sore. Or if you choose, instead of making the mouth sore, you will derive advantage from exhibition of tartar emetic in large doses; so as to keep the patient nauseated, and from time to time produce vomiting. Vomiting causes a great discharge from the affected parts; and therefore it is more useful than in any other inflamma-

tion. In many inflammations, it would be dangerous to practise vomiting; but in bronchitis many trust, next to bleeding, to the exhibition of full doses of tartar emetic;—a grain or more every three or four hours. However, I am not so satisfied with this plan, as with making the mouth sore; but if the patient do not go on so fast as you could wish, then you may give tartar-emetic afterwards. Nevertheless I am quite satisfied, that making the mouth sore is one of the most expeditious modes of cure. I need not say that blisters, low diet, and moderate purging, are also exceedingly proper. The treatment is that of common inflammation; and if it be well practised in time, and provided the patient be not the subject of chronic bronchitis, the treatment is easy enough. If the patient have *acute* supervening on *chronic* disease, your chance is slight; but even then the case must be treated on the same principles.

It is to be particularly remembered, that this disease will sometimes destroy life in the most insidious manner. I mentioned that it will exist without pain, and then it may be easily passed over; and I likewise mentioned that it will frequently exist with little cough,—not half the cough that you often have in common catarrh;—and then also it may be easily passed over. The patient is considered to have a little cold; but there is such prostration of strength, as surprises every body; and in three or four days the individual is past hope. I have known several cases of this description. This occurrence takes place particularly in those advanced in life; and therefore, whenever you are consulted by individuals near sixty, or who have passed that age, and you observe difficulty of breathing, the respiration hard, and the pulse quicker than it ought to be, it is well to listen to the chest, and find what disease he has. You may find the respiration to be sonorous, sibilous, or both; or perhaps mucous; and the patient may be labouring under excessive inflammation of the bronchia. You may hear these sounds in many parts of the chest.

This species of the affection is called "*asthenic* bronchitis;"—that is, the form of inflammation which is described as *atonic*; where the inflammation, however active, may be attended by no great strength of constitution; and where it very soon degenerates into passive inflammation, or the patient absolutely sinks. There is no power in the *system*; but the *parts themselves* are more or less inflamed; and at that time of life, with such a state of the constitution, the inflammation is sufficient to expend all the powers; and at the end of a few days the patient sinks. When a patient, therefore, in the decline of life, has a cold sufficient to make him call in medical assistance, it is necessary carefully to examine the breathing; and to observe whether it is frequent or not. It is also right to listen all over the chest; in order to ascertain whether there is not a pretty considerable degree of bronchitis;—considerable either in *degree* or *extent*; for sometimes it is inconsiderable in degree, but considerable in extent; and that is quite sufficient to hurry the respiration.

This is an unpleasant case to treat; and I have lost many such

patients in a winter. They are usually seventy years of age, or older; they have bronchitis; they cannot bear much bleeding; their powers are gone; and it is frequently vain to attempt to relieve them. All you can do is to bleed to two ounces; to bleed locally; to apply blisters; to get the mouth sore; and to give emetics; but you cannot do much with any thing. When you hear *sonorous* and *sibilous* rattle degenerate into *mucous* rattle;—if this be observed all over the chest;—if the patient's powers be gone, and he cannot lift himself in bed without aid, you will occasionally get him through, by good support, by wine and milk, and (according to the practice of some) by bark; but very frequently, in spite of all you can do, he will slip through your fingers. It is always provoking to lose a patient; but there is sometimes an especial reason for it; and you lose your credit, because you have not alarmed the family as you should have done. When old people are attacked with this disease in such an insidious manner, and their strength is all gone, it is very easy to offend the family by saying the patient has only a cold, when he is all but dead.

I have heard some old practitioners say, that these cases should be treated with bark and wine from the very first; and that they invariably cure the patient. One always doubts a man who says he cures *every* complaint, however excellent his plan may be. The powers have been prostrated, from time to time, by something or other; but after the first bleeding (with which perhaps, you cannot go far), and after blistering, and producing a slight affection of the mouth, or nausea and vomiting, it is necessary in a short time to support the patient well; and if there be any doubt about the propriety of going on with this strengthening plan, it is better to do so; —giving an emetic every day, so as to clear out the chest, and induce a free secretion; and during the rest of the day giving bark or quinine, and good nourishment, or even wine. In these cases it is necessary to procure rest by means of opiates, or narcotics, of various descriptions; but the essential thing is to cure the bronchitis. The bronchitis frequently comes on in an insidious manner, and is accompanied by no constitutional signs; but it is in old people that this particularly happens. We never see it in children, or in the middle period of life; but in those advanced in years we see it every day.

It is this form of the disease that has been called *peripneumonia notha*; — as if there were *bastard* peripneumonia, — not *real* peripneumonia; but I believe the word is used very indefinitely. Sydenham applies this expression to common bronchitis; where the head is ready to split, and where all the symptoms present are such as I described as common to bronchitis. We had better abolish the term "*peripneumonia notha*;" and remember that there is a disease of the air-tubes (that is, bronchitis) that may be *active*,—accompanied by strength; and must be cured by strong measures; and that sometimes it is attended by no strength at all; or, at least, that the strength will all go away in a day or two; and that whatever

measures are adopted, must be employed the first few days. I believe the term "*peripneumonia notha*" was supposed, by some, to apply to the latter state only; but if you read Sydenham, you will find it clear that he applies the term to those cases where there is considerable pain.

Speaking of the rattles, I should mention, that if the affected part be at a considerable distance from the front, you cannot hear them well. The nearer they are to the surface, the louder you hear them. Sometimes, if you place your hand over the chest, you discover a vibration at the same moment; but that is not always the case. It depends upon the extent, or the intensity, of the affection. If the air pass with great difficulty, it shakes that portion of the chest. However, it is not of very great importance.

Bronchitis is very frequently a *chronic* disease. Sometimes, and indeed generally, this is a mere degeneration of the acute form. In some persons, the disease, when it has once begun, however acute it may be, never ceases. At least, they have it every winter afterwards. I think I mentioned before, that another attack of the disease may not be *active*, but more or less *passive*; and some have the affection for two or three years; and then they die. But if you ask many asthmatic people (as they are called,)—that is, persons who have passive bronchitis every winter,—they will tell you that it came on originally after severe inflammation of the lungs, or a very violent cold. It is in the middle aged and the young, that chronic bronchitis is most frequently the consequence of a very acute affection. In *old* people it generally comes on very slowly; and is the consequence of what is apparently nothing but catarrh;—that is to say, a very slight acute attack of bronchitis, in old persons, degenerates into chronic bronchitis. In old people, too, it comes on very imperceptibly. They will perhaps have a severe cold one winter, and have it for two or three months; and then, the next winter, they will have it still worse; and so they go on, as long as they live;—having it worse and worse every winter.

This cronic bronchitis passes, vulgarly, under the name of asthma; and even among some medical men (especially those educated a long time ago) the term "*asthma*" is applied to bronchitis. Now asthma is, properly speaking, a pectoral difficulty of breathing. I say *pectoral*; for the causes of many difficulties of breathing, are situated in the larynx or in the windpipe. A spasmodic dyspnœa may be situated altogether in the larynx. Asthma, however, is purely pectoral. A spasmodic difficulty of breathing, such as true asthma, is frequently united with inflammation or congestion of the mucous membrane of the bronchia; that is, with chronic bronchitis; because when the mucous membrane is inflamed, it is commonly thrown into spasm; and unless it be removed, the muscles are also thrown into a state of spasm.

When the two diseases are united, they pass under the name of *humoral asthma*;—that is, spasmodic difficulty of breathing, with a great quantity of fluids in the chest. The "humoral asthma," men-

tioned in old writers, is nothing more than what I have now stated.

Chronic bronchitis is very frequently the cause of asthma. When a part has been frequently inflamed, it becomes excessively irritable, and at length spasm takes place; so that, when a person has chronic bronchitis, it is worse at one place than another,—it is worse at one *season* than at another; and the patient will be seized, all in a moment, with additional difficulty of breathing. You may sometimes have spasm without any inflammation of the bronchial tubes; but a common cause of spasmodic difficulty of breathing is certainly chronic bronchitis.

This chronic bronchitis, whether united with a spasmodic condition or not, varies in degree; from great congestion of the bronchial membrane, and of the whole lungs, down to a mere gleet,—a mere flux or gleet of the mucous membrane; in which state the mucous membrane may be red, or it may be without the ordinary signs of inflammation. You may have nothing but a mere gleet;—such as occurs in gonorrhœa when it has long gone by; and which, of course, does not deserve the name of inflammation. It appears to me (as I mentioned formerly) that, in the latter case, there is exactly the same state as we see in a serous membrane, where it pours forth a great quantity of fluid, but where you cannot discover signs of inflammation at all. On the contrary, the parts are whiter than usual, and have the appearance of satin.

In all these varieties of chronic bronchitis there is cough. There is also copious expectoration; and the expectoration is of all descriptions;—frothy, ropy, mucous, serous, watery, tenacious, and viscid, like gluten. Sometimes it is short and creamy;—just like pus; and sometimes it is absolutely purulent. These varieties of expectoration frequently exist, at the same time, in different proportions; and sometimes they succeed each other. The expectoration may be sweet and inodorous; or it may be dreadfully fœtid; but there is no danger from the latter circumstance. I have seen females with such a fœtid expectoration, that their sisters could not bear to sleep with them;—so fœtid, that, they were disagreeable to themselves; and yet no sign of danger whatever presented itself, and the patients did exceedingly well. They were going about without any particular ailment, except that they had a copious expectoration. In colour it will sometimes be bluish, sometime black; or it may be yellow, green, brown, or reddish. The latter is owing to the admixture of a little blood in it. Then, as to quantity, it may vary from a few ounces to two or three pints, in the twenty-four hours. The other symptoms vary in intensity. There may be dyspnœa, or there may be none at all. There may be merely cough and expectoration; but that is more particularly the case in what may be called mere gleet of the mucous membrane. When there is congestion of the lungs, or a spasmodic constriction, then you may have difficulty of breathing; and in other cases there may be such dyspnœa, that the patient cannot lie down;—such dyspnœa, that it will cause plethora of the head, face, and neck, distention of the

jugulars, suffusion of the eyes, and (I might almost say), blackness of the nose and lips, or even of the whole face. In such cases of extreme congestion the extremities may become cold and blue, and the urine scanty. The pulse may be either full, or small and feeble. In short, there may be all those symptoms which make many believe that hydrothorax has existed;—that, unquestionably, there has been water in the chest. It is in cases of this description that we are told, every day, by those who never employ their ears, that such a patient has water in the chest; and yet, on opening them, will find none at all, or not sufficient to explain the symptoms. I have frequently seen persons with all these severe symptoms; and yet, on opening the chest, there has not been a drop of water found in it; but I have found the lungs so congested with blood, that they would not collapse. On listening with the ear, all this was clear beforehand. Respiration was heard at the lowest part of the chest; whereas, if water had been there, you could not have heard it. On whatever side water exists, if the person be upright, there can be no respiration in the situation of the water; and on striking the part there can be no hollow sound;—on the contrary, the noise produced is like that occasioned by striking a solid, fleshy part,—like the thigh. Chronic bronchitis, therefore, may sometimes exist without any congestion of the lungs at all; or there may be the greatest degree of congestion.

This disease is very easily recognized, without auscultation; but the simplicity of the affection can only be determined by the aid of the ear. A person may easily say that another has bronchitis, whether it is acute or chronic; but without the aid of the ear, it is frequently impossible to say whether there is not something worse than bronchitis. Bronchitis may be frequently cured, or so reduced that little may be left; but there may be present another disease of a fatal character; and you may be able to ascertain this only by the ear.

In chronic bronchitis you may have the rattles of which I spoke in most, or nearly all parts of the chest; and they will be in different parts on different days. You may have different rattles on different days;—*sonorous* rattle one day, *sibilous* another, and *mucous* a third. The mucous rattle is seldom continuous. It generally arises from the presence of a great quantity of mucus; and if patients clear themselves well, (as they generally do), once or twice a-day, then the rattle ceases. In this, as in the *acute* variety of bronchitis, the respiration may occasionally cease in particular parts. It is by no means so frequently suspended as in the *acute* form of the disease; and some say that it *never* is; but occasionally it is lost; and then, for the most part, you hear it again.

That form of the disease which is characterized by great expectoration, and that of a character nearly resembling pus; which is attended by a little dyspnœa, but by no signs of congestion; and which is followed by emaciation; so that people waste, and at last become hectic;—this form is continually mistaken for phthisis; while on the other hand, that form in which there is congestion, is

mistaken for hydro-thorax. That species which is so often mistaken for phthisis, and passed by, may, if properly attended to, often be cured. This form, indeed, is better known by the *general* symptoms, than by the *peculiar* symptoms I have just mentioned. It is ascertainable by the ear, and by the absence of other symptoms of phthisis;—just as the congestive form of the disease is known, not only by passive symptoms, but by the absence of signs of hydro-thorax, or of disease of the heart, and so on. This form of the disease is known by the absence of pectoriloquy; and by other signs, which I shall hereafter mention.

I may state that you will find, in authors, various names given to this kind of affection. When it occurs in old people, it is called *catarrhus senilis*;—that is, a kind of bronchitis, attended with various degrees of congestion, and frequently none; but attended with gleet, and a great discharge; and as it occurs in old people, it is called "catarrhus *senilis*." But is nothing more than an ordinary affection of a mucous membrane;—that mucous membrane being that of the bronchia. Laennec considers it a particular form of chronic bronchitis;—a form more frequently attended with asthmatic complaints than any other. He says, that what is called "asthmatic spasmodic difficulty of breathing," most frequently arises from a kind of bronchitis in which the secretion is exceedingly viscid; and in which the mucous membrane is thickened and swelled,—particularly in the small branches; so that some of them are nearly blocked up; and in which the secretion is glutinous,—even firmer than pitch; and is disposed to form globules the size of hemp or millet seeds, semi-transparent, and of a pale grey colour. I have no observations of my own on this subject. I have not been able to verify Laennec's remark; but as he asserts it, it is worth attending to. Where we find asthma occurring, we ought to suspect that it is not a pure disease, but dependent upon bronchitis; and we ought to ascertain whether the expectoration possesses the characters just enumerated. He says that these globular bodies are seen in the expectorated phlegm; and that occasionally they are less consistent, and grow yellow; and sometimes resemble the vitreous humour of the eye. Such an expectoration is hardly noticed by the patient, in the midst of the common mucus which is secreted from the large branches; and which gives rise to so slight a cough, as not to merit his attention. He says the difficulty of breathing,—the spasmodic ailment, is almost the only thing of which the patient complains.

Here then is a *third* disease, which may be supposed to exist without chronic bronchitis; and which has continually been mistaken. Chronic bronchitis, attended by emaciation, may be mistaken for *phthisis*; where there is great congestion, it may be mistaken for *water in the chest*; but it appears that that particular form where there is an exceedingly viscid secretion, with small globular bodies, is continually mistaken for pure *asthma*. This is what Laennec asserts.

With regard to the treatment of chronic bronchitis, it is very va-

rious under different circumstances. Accordingly as the symptoms are inflammatory, and your patient strong, must your treatment approach to that for the acute disease; and accordingly as the patient is weak, and there are signs of *passive* rather than of *active* inflammation, so must you be careful in lowering the strength. In the latter case, when there are signs of *congestion* rather than of *inflammation*, and the powers of the patient are feeble, you may very easily conceive the great importance of not taking away a drop more blood than is absolutely necessary. Where you see the face black, the body bloated, the legs swollen, and only a small quantity of urine is formed, it may be necessary to take away a small quantity of blood; —perhaps a little from the jugular vein; or you may cup the patient between the scapulæ, and on the front of the chest; but the loss of more than a few ounces can seldom be borne. Diuretics and emetics are of the greatest utility. By diuretics you unload the lungs considerably. There is always a great collection of serous fluid in the air cells and tubes, and by diuretics you produce a great alleviation to the patient. It is a good practice to combine digitalis and squills together. You may give many diuretics together, when you cannot increase any one of them. When you cannot give the patient a larger dose of squills, without making him sick, you may add digitalis. It is certainly a very common thing for you to be able to give diuretics together, many of which have a tendency to produce sickness, without producing more sickness by the combination of the whole, than if you gave only one of them. The efficacy of a diuretic is generally thought to be much increased by giving a small quantity of mercury. This is an old remark; and I believe it is a correct one. You find it stated, that diuretics act more powerfully on the kidneys, if you give a small quantity of mercury with them, than if the latter be omitted.

You will also find great relief from the exhibition of emetics; and among the best is ipecacuanha. If you give antimony two or three times every day, you debilitate the patient; and this is not a case for diminishing the strength. You only want to unload the air-tubes; but antimony is a very depressing agent; and if given every day for a fortnight or three weeks, it may produce great irritation of the mucous membrane of the stomach (gastrodynia); and therefore I think ipecacuanha is the best. Patients will bear, not merely fifteen or twenty grains, but thirty; and it is a safe medicine. I am told that if you give a large quantity, it comes from the stomach, and produces no more effect than a small one. It is of great use to give an emetic every morning, or every other morning, and thus clear out the bronchia. It is an excellent remedy. When acute bronchitis has lasted a considerable time, and you do not think proper to evacuate, emetics may be repeated more freely;—especially in the case of children. When the case is not very severe, a nauseating dose of ipecacuhana, squills, and other things of that description, is very useful. Among the best expectorants are those which excite nausea. It is always necessary to attend to the bowels. If you do not, there

is still more congestion; but it is very dangerous to purge briskly. In these cases the powers of the patient soon sink; and it is better to trust to emetics and diuretics.

It is frequently of very great use to blister the chest; but the employment of tartar emetic ointment is rather a severe and cruel mode; and I have not seen that it is any better than an ordinary blister. Some persons are fond of dry cupping. There is no loss of blood in that operation; and yet there is a great determination of it from the inner parts. Besides remedies of this description, it is frequently necessary to employ others of a soothing nature. Among the best is hyoscyamus, or conium; which may be given night and morning. There is no rule for the dose of these; but you find you may increase them to a much larger quantity than you begin with. I have seldom found stramonium of much use in lessening the cough. It is not to be compared with hyoscyamus, or conium, or opium. Opium is one of the best things; but, in many of these cases, there is a great disposition to heaviness of the head; and opium has the inconvenience of confining the bowels; so that though it is a good medicine in the form of Dover's powder, yet it is not so good as hemlock or henbane.

You will soothe the air passages much, by making a patient inhale different vapours. Patients may inhale the steam of hot water; but one of the best modes is not to let them inhale the steam, but to have a vessel so contrived that the air they breathe comes through hot water. You cannot charge air with a dose of salts; but there are many things which may be taken up by the air, and which may be inspired in this way. You might make a solution of opium, or of extract of conium; and let the patient breathe through it. I have not much experience of it; but I have put hyoscyamus and conium into water, and have made the patients breathe it; and this has afforded great relief. Some persons have used prussic acid; and they say it has been productive of great relief. Chlorine may be introduced in this way; and I have seen it lessen the irritation. Some persons employ iodine; but it is right not to use more than one drop of the saturated solution of iodine. Some patients will bear three or four drops, but some will not bear more than one; and I have known some people who could not bear one drop, put into three quarters of a pint of water. It is right to begin with the smallest quantity; and never to increase it beyond what is borne without the least irritation. I had a patient in St. Thomas's Hospital, who laboured under chronic bronchitis; and who found great relief from breathing through tanner's liquid. Without taking any medicine, the tanner's liquid diminished his cough, and he became much better. People living in the neighbourhood of tanner's pits, often find their respiration improved.

You will find another description of medicine often useful. Where there is no fullness of the chest, but the bronchitis resembles phthisis; —where the patient wastes away, and has a tiresome cough, you will find tonics of great advantage. Where there is a disposition to dropsy, emetics and diuretics are proper; but where the patient is

more or less hectic, and is spitting up a great quantity,—a state which often occurs in young persons,—you find tonics of great use; and you find iron one of the best. There is an interesting case, in the first volume of the "Medico-Chirurgical Transactions," of a young lady supposed to be in a consumption; but by means of three grains of sulphate of iron, taken twice a day, she got well. I have had cases of that description without end;—where persons were supposed to be on the verge of phthisis; but where there was nothing but bronchitis. There were no signs of tubercles; but there was irritation of the mucous membrane; producing everlasting tickling in the throat.

DILATATION OF THE AIR-TUBES.

When chronic bronchitis has existed for a length of time, it is very common for something more than congestion, and a thickening of the mucous membrane, to take place; it is very common for the bronchial tubes to become *dilated.* Sometimes one, sometimes several branches, and occasionally the whole of the branches in one lung, will become so large, that those which naturally should admit only a fine probe, will have a canal equal to that of a common goose-quill, or even sufficient to admit a finger; and perhaps these dilated branches are seen spreading to others, not nearly so large as themselves. This is the consequence, in some instances, of chronic bronchitis; but whether it is that the particular tubes become hypertrophied, so as to grow to this diameter,—*grow*, in every sense of the word; or whether they become so distended with mucus, that they acquire this increased cavity, I cannot say. It is, however, by no means an uncommon occurrence.

There are two or three varieties of this dilatation. Sometimes you see it throughout the tube; and it may occur in one tube or several; and, not unfrequently, the coats of the tube are hypertrophied and indurated at the same time. Secondly, the tubes are sometimes only enlarged in one spot; and then a mere cavity exists.

It is occasionally so large, that it will contain a nut. In a third form, the dilatation will occur at intervals; so that there is a series of small enlargements. The pulmonary texture, on being cut into, appears as if it were swollen with a number of small red tumors; and the whole become filled with a puriform secretion. In this last form, the coats are said to be always thin; as though the dilatation had arisen merely from mucus; while, in the two first forms that I have mentioned, the coats are generally hypertrophied; and the dilatation appears to be the result of the hypertrophy. Hence it would appear, that this dilatation occurs sometimes from hypertrophy, and sometimes from a mere obstruction by mucus; and the result is that, in two forms of the disease, either the whole length or a part of the tube is dilated;—just as is the case sometimes with the heart; while, in the third form, there is a series like a string of beads; and the coats are exceedingly thin; as though the change of form resulted, not from hypertrophy,—for then the parts would not be

thinner,—but from simple distension. In cases of this description some other symptoms arise. The disease is attended with great debility; and the patient is broken-winded.

You may suppose that such an alteration as this, will give rise to some alteration in the sound of the chest. This is a matter rather of curiosity and of pathology, than of practical importance; but still, if any disease produce any symptom whatever, it is right you should know what it is; whether it will turn to good account or not. We ought to make it a general rule to go straight forward, and make as accurate a diagnosis as possible, whether we can do good or not; because, if it be not of practical application *to-day*, yet it may become so by-and-bye. We must not despise a discovery, because it is not applicable to practice. It is not usual to say,—What is the good of this, that, or other, till the time comes to turn the discovery to good account?

When small tubes are dilated, they approach nearer to the natural size of large tubes;—they approach nearer, of course, to the size of the trachea; and therefore, if there be any difference in the sound of respiration, in the sound of a cough, or in the sound of the voice, in the large branches, it ought to be the same when the small tubes become large ones;—and this is actually the case.

The sound which is commonly heard in respiration, in a healthy chest, (called "vesicular respiration"), it would be best to learn by listening to the chests of your friends. The ground-work is to be learned by listening to the healthy sounds of the chest; and therefore, even without patients, you may learn it of each other. Listen to your friend's lungs;—listen to your friend's heart; and, when you have learned the *normal* sounds, then only is it time to learn the *unnatural* sounds. If you listen to different parts of the chest of a healthy individual, you hear different sounds in respiration. If you listen to the lungs in general, you hear that minute murmuring which is called *vesicular respiration*; or, by Laennec, the *respiratory murmur*; but if you listen over those parts where you know there are large branches of the bronchia, you do not hear that *fine* murmur, but *rather* a rougher sound; there is not a distinct murmur,—a feeble crepitation; but there is a rough passage of air;—such as you may suppose will take place if air be traversing a pretty large tube. When it goes into a vesicle and out again, there is a minute crepitation,—scarcely to be called a crepitation; and it gives the sound of murmur; but if you listen over a large tube,—one of the divisions of the trachea, you hear a rougher sound. This is all I can say;—you must listen to understand it. Then, if you listen to the trachea itself, you have a still rougher sound;—merely from the tube being so much larger. The respiration heard in the chest at large, is called "*vesicular* respiration;" because it is the sound of respiration passing to and fro in the air cells. The sound in the bronchia is the "*bronchial* respiration;" and that in the trachea, is the "*tracheal* respiration."

You will hear *tracheal* respiration at the anterior and lateral parts of the neck. You will hear it at the upper part of the sternum;—

the superior sternal region. You will also hear it at the superior portion of the infra-clavicular regions,—just under the clavicle; and you will hear it at the cervical portions of the acromion region,—near the acromion of the scapula. In these situations you hear the sounds of respiration, which the passage of air through the trachea gives rise to.

You hear the sound which the large branches of the bronchia give, (called *bronchial* respiration), in the middle sternal region;—that is to say, below the part of which I have just spoken; and you will hear it to the right and left of it. Here you will find bronchial respiration;—the sound of air traversing the large bronchia; and you will hear it, in thin persons, between the scapulæ and in the axilla. You will hear the sound of air passing to and fro in the air cells,—(*vesicular* respiration), in every part except the superior and middle portions of the sternum. You will hear it to the right and left of these portions; in the axilla; between the acromia; between the acromia and the neck; and in the superior part of the chest, immediately below the clavicle. It is well for you to study this on each other's chests.

If it so happen that certain tubes are dilated, then you will hear, instead of the respiratory murmur which I mentioned, a sound approaching to that of the bronchia, and even approaching to that of the trachea. This is one of the chief signs of the bronchia being dilated. They may, as I have just said, be dilated to such an extent, as to sound very much like the trachea; but, in general, you have only *bronchial* respiration.

If you make the patient speak, and listen to different parts of the chest, you will have very different sounds, according to the part at which you listen. If you listen to the greater part of the chest, you hear nothing particular; but if you listen to those parts where bronchial respiration is heard,—that is to say, at the superior part of the sternum, immediately below the clavicle, and also between the scapulæ,—you will hear the voice resound very much. You will hear it re-echo. There is no better mode of expressing it than that. You hear a sound of considerable force; but you hear no such thing if you listen to other parts of the chest. This arises from these parts being situated over the bronchia. If you listen over the trachea, you have a loud sound. Indeed, you hear the voice rush through the tube; so that you have *bronchophony*, and what is called *pectoriloquy*. You may have an idea of what is meant by "pectoriloquy," by passing the stethoscope over the trachea or larynx of any adult person. You find the voice come through the tube to the ear, as if the voice were against the ear. The natural sound of the voice below the clavicle, at the upper part of the sternum, and between the scapulæ, is called *bronchophony*; and the natural sound on the larynx is called *laryngophony*.

If any of the bronchial tubes be very much dilated, so that *small* tubes attain the size of *large* ones, you will have over the former just such a sound as you have over the latter in health. You have

bronchophony at a part where it should not exist; and if the bronchial tube be dilated enormously,—nearly to the size of the trachea, so that it amounts to a cavity,—you will have the voice come through the tube into the ear;—you will have *pectoriloquy*; and pectoriloquy is neither more nor less than the same sound which you always hear, if you apply the stethoscope to the larynx. It must be a very extreme dilatation, however, for you to hear the voice come through the tube in this way. It is common to have such a sound as you hear in the *bronchia*; but to have such a sound as you hear in the *larynx*, is a rare thing. Indeed, there must be a larger dilatation than I ever met with. Such a dilatation occurs from time to time; but it is so rare that I never met with it. There are drawings of it; and there is no doubt as to the existence of the fact. In dilatation of the bronchial tubes, therefore, there is bronchial respiration and bronchophony; and if the dilatation be very great, there is tracheal respiration, and a tracheal voice. As you may suppose, the nearer the tube is to the surface, the more clear are these sounds.

DIMINUTION OF THE AIR TUBES.

Chronic bronchitis, however, will sometimes induce the very opposite state. Instead of causing the tubes to become *dilated*, it may cause their coats to become thicker; and the canal will thus be *diminished*, and not dilated. Sometimes there is lymph effused within; so that the tubes are completely obstructed. When lymph has been effused within, and the tube has been obliterated for the time, it has been called a *bronchial polypus*. It is nothing more than the same occurrence that takes place in croup;—that is to say, lymph is effused; only not in a tubular form. I once knew a case of gonorrhœa, which filled the urethra with lymph; which lymph was discharged in a tubular form. Where the bronchia have been obstructed by lymph, it has been an instance of chronic inflammation;—at any rate, not of *acute* inflammation.

In old books you will find it said, that nobody could imagine what was the matter with the patient; and that then such a mass as this has been spit up. In cases of this kind, you could tell what would be the auricular symptoms. At the obstructed part there would be no sound of respiration; and as soon as the lymph was spit up, there would be the murmur again. But without such a cause of obstruction as this, the tubes are sometimes blocked up. The cavity is obliterated by the sides becoming thickened and contracted; and then no respiration, of course, is heard at the part; and this want of respiratory murmur is permanent. In the case of acute bronchitis, it will cease (from a temporary obstruction of the tube) for a few hours; but coughing removes the obstruction, and you hear the sound of respiration again; but when the obstruction arises from a contraction of the tubes, the want of respiration is permanent.

DILATATION OF THE AIR-CELLS.

Chronic bronchitis produces a farther change, precisely of the nature of dilatation, of which I have already spoken. The minute tubes of the bronchia terminate, as you know, in the air-cells; and it occasionally happens that the air-cells are dilated by this disease. This has been called "*emphysema* of the lungs;" but I think it an improper expression; because by "emphysema" we mean the presence of air in the cellular membrane, where there ought to be no air. Now in this case there is no air in the cellular membrane,—no air in any place but where it ought to be; only the part which contains the air is too large,—contains too much.

These dilated air-cells attain, in general, only the size of millet-seeds; but here and there one may be seen the size of a hemp-seed, and even as large as a cherry-stone. When they are the size of cherry-stones, it is very probable that the air-tubes open into the cells; and that all the cells separating from the tubes, they are dilated into one common cavity. I should think this was the cause. You are acquainted with the anatomy of the air-tubes and air-cells; and therefore you are aware, that at the termination of each twig of the bronchia where it is as fine as a hair, the air-cells are situated all along it;—just like grapes upon a stalk. I think it probable that when a bronchial twig is dilated to a great size, the air-cells which separate from it, are dilated into one. Occasionally, those of the greatest magnitude actually project on the surface of the lung; and are so prominent as to form a large globular form externally. Sometimes they are as large as a walnut, and even larger. There is a preparation at St. Thomas's Hospital, where there is a tumor of this description on the surface of the lung. In extreme cases of this kind, you will see the edge of the lung quite translucent, and standing away from the body of the lung.

If the quantity of air be very considerable, the sides of the cells may crack; and then a communication is established between them and the cellular membrane; so that true emphysema is superadded. In that case, the tumor upon the surface of the lung may attain a very great size; and the air may, by pressure, be forced about. But notwithstanding that the cells occasionally crack, and that air escapes into the cellular membrane of the lung, still it is found, that it does not move about very extensively;—not so extensively as it does in other parts of the body.

If lungs with dilated air cells be inflated and then dried, (which I imagine is the best way of preserving them), the dilatation of particular air-cells will be seen, on cutting into them, to be more considerable than appeared externally. When the dilatation is considerable, and at the same time so extensive as to occupy the whole lung, you will find, on opening the chest, that instead of collapsing, it rebounds, and projects beyond the chest. A lung thus affected, necessarily sinks less in water than a healthy lung; and, on handling it, it does not crepitate in the usual way, but it gives such a sound as

would arise from the slow escape of air; and you cannot empty it as readily as you could a healthy lung.

You will find that the tissue of the lung is drier than in health; and that even the roots of the lungs have not the usual infiltration found in that part. The lungs resemble those of a reptile more than those of a man. You know what the lung of a frog is; and the human lung is reduced very much to that state. The lung of a frog has a large receptacle for air;—not the minute cells that we have; and on opening the animal, the lung escapes the boundary of the chest. When only one lung is thus affected, it has been seen to become so much more bulky than the other, as to push aside the mediastinum, if on the left side, and to produce an enlargement of the heart, if on the right side. Laennec has described this condition of the lungs far more acurately, and far more minutely, than any of his predecessors; but (as you may see from his engravings) it was well known to Dr. Baillie. Dr. Baillie speaks of an enlargement of the air-cells causing the lungs to resemble those of amphibious animals. He considers it probable that two or three cells may be broken into one; and therefore, although Laennec has the credit of having first described it, it is right that we should give Dr. Baillie his due. Dr. Baillie also remarks, that Sir John Floyer distinctly describes the disease, as seen by him in a mare; and he considers the remark as applicable to the human subject. "The bladders," says Sir John Floyer, "are either broken, and admit the air into the membranous interstices, or else they are over distended; like a hernia in the peritoneum. This will produce an inflation of the whole substance of the lungs; and that a continual compression of the air and blood-vessels; which will produce a constant asthma." He was aware of this dilated condition of the air-cells; and he describes asthma as occasionally caused by this over distension.

The causes of this over distension, and of the rupture of the coats of the air-cells, may be a violent inspiration and retention of the breath;—such as occurs in blowing a wind-instrument. It may be from a mere debility of structure,—a loss of elasticity; but the most common cause is occasioned by the want of a due expansion of the lungs. Whatever prevents any one part of the lungs from expanding, when the thorax expands;—whether it be a material obstruction of the bronchial ramifications; or a compression of them; or whatever else;—it will occasion those parts which remain dilatable, to keep dilated in a corresponding increased degree, in order to fill up the vacuum which the expansion of the chest occasions. When we inspire, we dilate the chest; and the air rushes down the trachea, and the lungs follow the dilated portions. If there be any part that will not dilate, then (I presume) other parts are over-dilated, to fill up the vacuum; and, in that way, those parts which we distend are *over* distended, in order to compensate for the want of distension in other parts; and when once over distended, they are often unable to recover themselves; just as is the case in other parts of the body;—the urinary bladder, for instance. I presume it is on this account,

that the dilatation of the air-cells is so common in persons labouring under chronic bronchitis;—especially where the membrane is most thickened; and where the secretion, if there be any, is tough and adherent, so as to produce obstruction. Such, at least, is the explanation which presents itself to my mind. Laennec, however, gives a different explanation. He supposes that the air which passes through the imperfectly obstructed tubes, in chronic bronchitis, cannot easily escape again; but there it remains, imprisoned in the air-cells, by a mechanism somewhat similar to the mechanism of the valves of an air-gun; and the succeeding inspiration introduces a fresh supply; so that the accumulation is very great. I cannot refute this explanation; but the occurrence of the facts upon which I ground my explanation, is indisputable;—namely, that in inspiration we dilate the chest, and the lungs follow; and that if one part be obstructed so that it cannot dilate, the other parts attempt to get more of the air, for the purpose of filling up the cavity of the thorax. Thus when one part is obstructed, another will become dilated; and Laennec, to prove his opinion right, should have shown that the dilated air-cells are those belonging to the tubes in which obstruction exists. That he has not done; and I conceive they are not those in which there is obstruction.

The existence of this state of the lungs,—morbid dilatation of the air-cells,—cannot be known without the use of the ear. Dr. Baillie, of course, knew nothing of the auscultation. It was not known or practised till after his time. But he says, with great truth, that when the air-cells of the lungs are much enlarged in size, persons have been remarked to have been long subject to difficulty of breathing, more especially on motion of the body. I believe, however, there are no symptoms at present known, by which this disease may be discriminated from some other incidental to the chest. The dyspnœa does not differ from the same symptom under other circumstances. It frequently occurs in paroxysms; and will continue for many years. But the pathognomonic signs are obtained from percussion and auscultation;—not from either alone, but from the union of the two; for if, when the air-cells are greatly dilated, you strike that part of the chest, a sound is heard exactly as in health, and perhaps even clearer; for owing to there being but little pulmonary substance there, you have a sound more hollow than even in health. This is the first thing which you must expect. Then, if you listen to respiration at the part, there is very little murmur audible. Instead of a number of minute cells, with air rustling in them, there are only two or three cells largely dilated; and therefore the air cannot rustle as before; so that you hear very little of the respiratory murmur. The air which is there, scarcely leaves the air-cells;—scarcely passes to and fro. The part is not expanded; and the consequence is, that there is very little motion of the air. But it is to be remembered that you *do* hear *some* respiratory murmur; and this is the distinction between the presence of air in the pleura, and the presence of air in merely dilated air-cells. If air exist in the pleura, there it remains;

and you have a more hollow sound than usual; but on listening, there is no respiratory murmur; for the air is in a state of stagnation. In the case of dilated air-cells, however, there is a little driven out, and a little drawn back again; and therefore there is a trifling respiratory murmur. In the one case there is none; but in the other there is some.

It is said that when this affection is extensive, there is another pathognomic sign;—the inspiration is made with a crackling sound; as if the air were entering, and distending lungs which had been dried, and the cells of which had been universally dilated. The lungs are drier in this state than in health; and when the case is very severe, the inspirations are attended with the sound I have just described;—a sound similar to that produced by blowing into a dry bladder. This has been termed by Laennec "dry crepitous rattle, with large bubbles." It is an odd appellation; but it gives you the idea of dryness; and therefore it is a "dry crepitous rattle;" and it gives you the idea of the bursting of bubbles, on the surface of fluid; and therefore he says,—"with large bubbles." These are extreme cases. I never witnessed one of them. If you reflect a moment, you will find no difficulty in remembering this. When the tubes are dilated, they approach to the size of the bronchia, and you must therefore have the same sound in the former that you hear in the latter; and if the air-cells be dilated, it stands to reason that you cannot have the same minute murmur, that you have when the air is passing into a thousand minute cells. It also stands to reason that you will have a clear sound there,—just as you have in health; because there is air there, as before; and if the dilatation be very considerable, you will have a clearer sound than before; because there is little else there but air;—little pulmonary snbstance. I need not say that nothing can be done, either for bronchial tubes or for air-cells that have fallen into this dilated state. The treatment will not vary from that proper for chronic bronchitis. You must treat the case on general principles.

PNEUMONIA.

Having concluded the subject of inflammation of the air-*tubes*, I shall now proceed to speak of inflammation of the air-*cells*. A large number of cases of inflammation of the lungs, are considered to be inflammation of the *substance* of that organ; but they are in fact nothing more than bronchitis. In by far the greater number of instances, it is not inflammation either of the air-cells, or of the cellular membrane; but inflammation of the bronchial tubes. Occasionally, however, we have inflammation (as it would appear) of the air-cells themselves. This, properly speaking, is *peripneumonia*. The term "*pneumonia*" is the name given to any inflammation within the chest;—even to inflammation of the heart and pericardium;* but the word "*peripneumonia*" is more properly applied to

* The word is not now used in that sense; and the term "*peripneumonia*" is very much out of fashion.

inflammation either of the air-cells, or of the cellular membrane around them;—whichever it may be. For myself, I have no doubt that the inflammation is seated in the air-cells themselves; and it is in this point of view I shall now speak of it.

The common, well-known symptoms of this disease,—those which are discernible without the aid of the ear,—are very much like those of bronchitis. There is pyrexia, general feverishness, rapidity of respiration, shallowness of respiration, cough, and expectoration. In bronchitis, you will recollect, I mentioned that there is a sense of constriction in the front of the chest; and a soreness (sometimes pretty considerable) in coughing; whereas in peripneumonia, if there be any thing, there is rather a deep-seated dull pain. This is sometimes confined to one spot; though, for the most part, this dull uneasiness is pretty much diffused, and, indeed, is frequently so very slight, that a diagnosis cannot be universally made from it. Then the dyspnœa, if people lie still, is by many persons scarcely complained of, any more than it is in bronchitis. Some persons labouring under bronchitis, will not allow that they have difficulty of breathing; neither will they in peripneumonia. Just as in bronchitis, there is frequently violent cough; but sometimes there is scarcely any;—the cough is infrequent and soft. There is, however, according to Laennec, a decided difference in regard to the expectoration. He considers that the expectoration, in peripneumonia, is a pathognomonic distinction; and points out the nature of the disease. He says that when, in this disease, the sputa are received into a flat and open vessel, they unite into so viscid and tenacious a mass, that we may turn the vessel upside down, even when full, without the sputa being detached; for although they may partially hang from the vessel's mouth, the great bulk still sticks to the vessel. Their tenacity is such, he says, that they vibrate like so much jelly; and the tenacity prevents the air-bubbles from breaking, though they are very numerous in this kind of sputa, and sometimes very large. The air does not escape, but forms bubbles; and for the most part, be they small or large, they remain.

I cannot confirm or disprove Laennec's assertion, from my own observations; but I think all will allow that we must look beyond the sputa, as well as beyond the general symptoms, for an accurate diagnosis of this disease.

For Laennec allows that the sputa are frequently not so viscid as all this; he allows that, frequently, they are of some shade of red or green; though for the most part they are but little coloured; and he allows that, frequently, they are almost destitute of air bubbles,—frequently a mass of mere mucus or pituitous secretion, with a few glutinous, and slightly tawny portions. I cannot but think, therefore, as he allows all this, that we ought not at all to depend upon the sputa for a diagnosis. Indeed, when the characteristic sputa do occur, as they continually do, it is very often only at the onset of the disease,—only for a few hours; and sometimes even then only in so small a quantity, as scarcely to admit of being collected.

The pathognomonic signs of this disease, are acquirable by the

ear only; but before considering them, it will be necessary to trace the appearances in the lungs after death, and the succession of the changes. This is an opposite course to what we usually adopt. Generally we speak of *post-mortem* appearances *after* we have done with the symptoms; but here it is necessary to reverse the order; for the symptoms are in accordance with the unnatural changes.

In the *first* stage of inflammation of the air-cells, the lung merely suffers an accumulation of blood; so that it becomes more solid and heavier than usual. It looks livid externally, and retains the impression of the fingers;—like an œdematous limb. On cutting into it, it is found to be of a deep blood-colour, and replete with frothy, bloody fluid; but still the lung is spongy;—still it crackles under the fingers. This is a stage in which, after death, you will find nothing but an accumulation of blood and serum. As the lung crackles after death, —as it contains air to the very last, you will expect to hear the murmur of respiration in these particular parts during life; and that is the case; and as air is admitted, you will expect to hear, on percussion, the usual hollow sound of the chest; and that likewise is the case. But the murmur which you hear when the inflammation has only reached the first stage, in that particular part, is accompanied (even from the very first moment of the attack) with a crackling sound. You have not the ordinary murmur of respiration; but it takes place with a *crepitous rattle*, as it is called; or, if you please, a crepitous *respiration*. It gives you the idea of numerous minute, and almost dry bubbles; and you hear this dry crackling the more decidedly, the nearer the inflammatory spot seems to be to the surface; and those who have employed their ears frequently, can from practice tell the exact depth of the inflammation, from the loudness of the crackling. The nearer the disease is to the surface, the louder it is heard.

When the inflammation has become more intense, (so as to constitute the *second* stage), the lungs are heavy; and they become so firm as to resemble liver; and on this account the term "*hepatization*" has been applied to this state; but really, I must say, very absurdly. The lungs are not changed into liver. If they were, it would be "hepatization;" but if they only remain as *solid* as liver, —something *like* liver, it is an improper word. By "*ossification*," we mean an absolute conversion into *bone*; and by "*hepatization*" we ought to mean a conversion into *liver*. If a thing is to be named in this way, because it is only *like* another, strange words might be applied to every thing. "Hepatization" merely means that the lungs have become as solid as liver; and Andral proposes another term,—"*solidification*;" which I think better. If the lungs have become solid, "solidification" is a correct term. In this state, where the lung has become solidified, it will not crackle under the finger; —it has evidently become impervious to the air. If you cut it, squeeze it, and scrape it, very little fluid escapes; and what does escape, is not frothy; neither is it so thin as that which escapes in the first stage. I presume that, in these cases, there is more or less

fibrine effused or deposited; and that is the explanation of the solidity;—the want of air, and the want of frothy fluid. When the lung has fallen into this condition, you may presume what the symptoms are. On striking that part of the chest where the lung has become so solid, of course you cannot have a hollow sound. There is no air there, as there usually is. There is no room for it; but there is a solid mass; and on striking over it, you have the same dead sound as if you struck over the liver. On listening to the part, as it contains no air, of course you cannot have the respiratory murmur; and having no murmur, there is no respiration; so that you cannot hear crepitous rattle. In the *first* stage you have crepitous rattle, because there is a thin fluid in the air cells; but here there is *no* thin fluid in the cells;—they are all solidified; and therefore there is no crepitous respiration. If, however, the part happen to be situated near a large bronchial tube, you will hear the patient's voice there;—on account of solids being better conductors of sound, than aeriform bodies.

Before death, however, a still further change will take place. Inflammation of the lungs tends to suppuration; and, at an advanced period, a *third* stage occurs. But there is a peculiarity in suppuration of the lungs;—the pus is *diffused*, and not collected into an *abscess*. After the second stage, when the third begins, the lung is as hard as before; but it becomes yellowish, or of a straw-colour. When the pus is first formed, in small quantity, there is quite sufficient to change the colour of the lung; but after a little time the pus becomes more abundant; the lung becomes soft; and will yield to the point of the finger. In this stage, just as in the second, there is no hollow sound on striking the chest; neither is there any respiratory murmur; but a loud mucous rattle;—that rattle which I stated you may have an idea of, by recollecting the sound occasioned by air passing through soap-suds. The mucous rattle is heard in the bronchia; either from some of the pus going into them, or a secretion from their own membranes.

Should an abscess be formed, however,—should the pus be collected into a mass, a characteristic symptom will be heard; such as I shall mention under the head of "phthisis." But such an occurrence is extremely rare. I do not recollect above twice seeing an abscess in the lungs, great or small, resulting from inflammation; and when I did see abscesses, they were small and full; and just as likely to be the result of a few distinct tubercles, which had existed in the lungs previously to the inflammation, as of inflammation itself. Some persons will have an old tubercle or two formed in the lungs, without inflammation. That is what we see continually. These tubercles may suppurate, and an abscess be formed; and if the lung fall into a state of inflammation, the solitary abscess may be ascribed to inflammation. So rarely is it the result of common inflammation of the lung, that I have only seen it, I am sure, once or twice; and then I cannot be certain that it was the result of inflammation, and not the result of previous tubercles. When abscesses do occur in

the lung, I am satisfied that Laennec is right in asserting, that they are almost always occasioned by the softening of tubercular deposition,—the softening of scrofulous deposit. "Among several hundred dissections of peripneumonic subjects," says Laennec, "I have not met with a collection of pus in an inflammed lung, more than five or six times. These were not of large extent; nor were they numerous in the same lung." * Even Broussais, to whom Laennec was in many points indebted, declares that he never saw ulceration in the lungs, without tubercles, more than once; and then the inflammation resulted from a musket-ball, which was tantamount to a tubercle. The reason assigned by Laennec for the rarity of an abscess in the lungs is, that the disease is either cured by art, or destroys life before it proceeds to the length of destroying the pulmonary tissue;—that death takes place before the disease advances so far, as for matter to be formed in the lung, in the form of an abscess.

This disease is frequently fatal when it is not of great extent; and when it has not passed the first of the three stages to which I have alluded. The first and second of these stages, are frequently seen in different parts of the same lung; and you may even see the third stage. You observe one stage going into another.

It is very remarkable that, in the greater number of instances, the inflammation commences at the lower part of the organ; and it may not extend higher. Consequently when the disease has advanced, it is in the lower part of the lung that the second or third stage is generally found; while higher up the disease may be only in the first stage, or entirely absent. The right lung, it has been asserted, is more frequently affected than the left. Of that I cannot speak; but I can speak to the fact of inflammation beginning at the lower part of the organ, in an infinitely greater number of instances than higher up. There can be no doubt that the membrane of the air-cells, and not the surrounding cellular tissue, is the seat of the disease. In the second stage of the disease, when the lung is solidified, but still red, if the structure be cut or torn, instead of the natural appearance of the cells, the inflamed part has minute granules, round or oval;—corresponding exactly with the appearance which the air-cells would give, if filled with a tenacious fluid, and solidified. Indeed, Louis found that, by forcing fluid into the bronchia, the same granular appearance might be produced by art; and therefore this granular appearance clearly arises from the air-cells being filled with the same tenacious fluid. The crepitous or crackling rattle also, I think, shews the same thing; for it is heard in another affection, in which this thick fluid evidently exists in the air-cells. In hæmoptysis, when bleeding takes place in the air-cells, the same sound is heard as in

* See his celelebrated Treatise, entitled,—"De L'Auscultation Mediate; ou Traité du Diagnostic des Maladies des Poumous et du Cœur; fondé principalement sur ce Nouveau Moyen d'Exploration." This work is principally known to the English reader through the Translation by Dr. Forbes;—a work which is enriched with many valuable notes.

peripneumonia. In hæmoptysis, this must arise from little bubbles snapping and cracking through this fluid; and as precisely the same sound is heard in peripneumonia, I think it is a strong argument to prove that the air-cells are affected by the disease; more especially when we see that a certain peculiar fluid is spit up in the affection.

Those rare cases of inflammation of the lungs which end in the existence of abscess, are marked by the same auscultatory phenomena, as occur when there is a phthsical excavation. You hear the sound come through the tube; and when the patient breathes, there is the sound of a cavity; and there is a metallic tinkling, of which I shall hereafter speak;—a noise as if a bell were struck with the point of a pin, or something very fine.

If, by art, the disease be remedied,—if the inflammation yield, of course the lung goes through the same stages as before, but inversely. The third stage comes to the second, and the second to the first; and it is found that the signs, audibly noticed by the ear, go through the very same inverted course. The auscultatory phenomena heard in the second stage disappear; and those which occurred in the first stage are heard again. Nothing is more interesting, certainly, than to trace the reversed order of the changes here. Suppose the disease has only gone into the first stage, you hear the hollow sound on striking as in health; and, on listening, you hear a crepitous rattle, and even a crackling. You cure the patient; and, as he is being cured, the crepitous rattle declines;—it becomes fainter and fainter every day; and instead of that, you have the natural murmur of respiration more and more distinct. Suppose the second stage has been reached, and you are successful;—in that case the want of a hollow sound, on striking the chest, gives way; and you hear, by degrees, a little hollowness of sound; and you hear it more and more every day; till that side of the chest sounds as hollow as the other. The respiration had ceased from the lungs having become solid; but you hear a little crepitous rattle, increasing every day, till you hear it as distinctly as in the first stage; and then, having arrived at the first stage, the disease passes through that entirely. You hear the crepitous rattle decline; and you have the natural respiratory murmur, becoming more and more distinct. I mentioned that, in the third stage, you still have no hollow sound; but you have a mucous rattle, generally from the entrance of pus into the bronchial tubes. This declines by degrees, if the patient get better; and then you gradually hear a crepitous rattle, from the cells losing a part of their viscid contents; so that they again admit a portion of air. The chest then regains its hollow sound on striking; and, at last, the crepitous rattle declines. Anatomical examination shows the changes of the part to be precisely correspondent with these auscultatory phenomena. When the first stage is recovered from, the lung is found to grow less red,—less turgid. Supposing the patient dies from intense inflammation of one part of the lungs, there is a lower degree in another part; and you find that is only in the first stage; but you are still able to make your observations there. You find, perhaps, that you have cured the in-

flammation at that one spot; that respiration is heard there more and more; while in another part it is heard less and less. But the patient dies; and, by examining different parts of the lungs after death, and having listened to them through life, you are able to trace the changes. When the inflammation of the third stage is being recovered from, the lungs become less turgid; and when the second stage is being recovered from, and the lung is going back to the first, the colour also becomes less intense; the texture becomes softer; the weight decreases; the organ, on comparison, affords more fluid; and the fluid becomes more and more of a frothy character. In the second stage, I mentioned there was a considerable granular appearance; this granular appearance now declines, and the vesicular character of the lung returns. When the third stage is recovered from, the yellow colour becomes lighter and lighter; the pus becomes more aqueous, less thick, and at length frothy; the accumulations of pus are reduced to mere specks; the vesicular appearance returns; the lung crepitates, and at length grows natural; and the little serous infiltration that existed is absorbed.

Notwithstanding that cases of peripneumonia are every day recognised, and the amendment or exasperation of the disease ascertained, by practitioners who never employ their ears;—as though nature had given us ears to be used on every occasion, except when we are practising our profession; yet the observation of the auscultatory signs, in the three stages of peripneumonia, is sometimes more than a philosophical observation,—more than an intellectual gratification. Many cases of inflammation of the lungs, I know, have been overlooked in the midst of other diseases; or have been totally mistaken. It is vain for those who obstinately refuse to avail themselves of the means given us by nature (in the sense of hearing) for learning the phenomena of disease,—it is vain for them to assert, that they can form an accurate diagnosis on all occasions; for these persons are perpetually lamenting, that medical evidence is uncertain; and, to my certain knowledge, they do frequently mistake diseases of the lungs for diseases of the heart, and diseases of the heart for diseases of the lungs. In the affection before us, (peripneumonia), if it suddenly supervene during a chronic affection of the chest, they continually ascribe the symptoms to effusion, to pleuritis, to dropsy of the chest, or to something else;—having no idea whatever of the real disease. In phthisis, an aggravation of the dyspnœa, unattended by pain, is very common; and is ascribed to effusion into the chest, or the bronchia, or the substance of the lungs; and, in chronic bronchitis, such an aggravation is ascribed to an attack of spasmodic asthma; when the simple trouble of listening to the lungs would show crepitous rattle; and prove that the difficulty of breathing arises from the presence of peripneumonia. In various fevers (eruptive and simple), in simple dyspnœa (without pain), during an attack of rheumatism and of gout, peripneumonia is continually overlooked; and some surgeons have stated, that after severe wounds and operations, peripneumonia will occur in the most insidious manner; and will not

be discovered till all possibility of remedy is over. Surgeons have lost patients under operations, after having suffered severe accidents, without knowing why; and, after death, they have discovered that the lungs were inflamed. This is a fact that you will find mentioned in many surgical books. All this mischief will be prevented by examining the chest with the ear, in every instance of dyspnœa whatever;—where there may be no pectoral symptoms at all;—no signs of any morbid affection of the chest; but where pectoral complaints are likely to supervene. This may be avoided by examining the chest, from time to time,—exactly as we feel it to be our duty, on other occasions, to ascertain not only the state of affected parts, but the state of the head, and of the abdomen.*

As to the *causes* of this disease, they are those of any other inflammation. I did not speak of the causes of bronchitis; because in both diseases they are the same. Cold is a common cause; and so are vicissitudes of temperature;—cold and heat, applied in the way which I mentioned when speaking of inflammation. Both bronchitis and peripneumonia supervene on the other affections of the chest. It is common, in diseases of the heart, for persons to be seized with one or the other, either in an acute or chronic form. Nothing is more common, than to see bronchitis and peripneumonia united with diseases of the heart and pericardium; and so nothing is more common, in diseases of the lungs, than to see these affections. In phthisis we have bronchitis, acute and chronic, and peripneumonia; and so in every other disease of the chest. Inflammation is frequently idiopathic; arising from a common cause; but sometimes it is symptomatic;—being the mere result of another disease of the neighbourhood.

With respect to the treatment of the disease, I shall not dwell a moment upon it. It is only the treatment of any inflammation. Patients have sometimes borne the loss of an immense quantity of blood:—perhaps more in this disease than in most others. It is in this affection that those enormous bleedings, which I have mentioned when speaking of inflammation in general, are reported to have taken place, a few gallons in the course of a few days. I have no experience of such bleedings as these. Mercury is of the same use in this affection as in the bronchitis; and in bronchitis as in other inflammatory diseases.

GANGRENE OF THE LUNGS.

You might suppose that if the lungs ever became gangrenous, it would be the result of inflammation; as gangrene so frequently is in other parts of the body. But I believe that the severest inflammation of the lungs seldom, if ever, induces mortification. Sometimes it may

* For an account of the different auscultatory signs mentioned here, and under the head of other Diseases of the Chest, beginners are referred to an "Introduction to the Stethoscope; with its Application to the Diagnosis of Diseases of the Thoracic Viscera. By William Stokes, M.D." A very good description of them is also given in a later work on Auscultation, by Dr. Spittal, of Edinburgh.

may be the case; but it is so rare that I have never seen it. The lungs will fall into a gangrenous state; and there is more or less inflammation attending it; but the gangrene does not appear to be the *result* of the inflammation. On the contrary, indeed, when nature makes an attempt to get rid of a gangrenous spot, inflammation is induced all around, in order to discharge it;—so that the inflammation is sometimes the result of gangrene.

In my own practice I have only seen two cases of this disease. They were of a different kind; and completely illustrated what Laennec has advanced on the subject. On some points Laennec has brought our knowledge to perfection. In some cases nothing has been done since his time; and perhaps nothing *will* be done. In one of these cases, in my own practice, the gangrenous part was uncircumscribed. A large part of the lung was of an unnatural colour;—dark greenish, moist, and soft; and in some spots it was a mere putrid pulp;—little more than so much mud; and of an insupportable odour. In those parts of the lung which I saw, that were not in a gangrenous state, the organ was firm, and of a chocolate colour, or a deep green. These appeared to be the three stages of the complaint. There was one part a chocolate colour, or deep green, and quite firm; another part was moist and soft, and of a dark green; and the third part formed a perfectly putrid, soft, muddy mass. A large portion of each lung was in this condition;—in one of the three stages of this affection. In another case which I had, the gangrene was in more circumscribed patches or spots. There were patches of the lung, black, soft, moist, and offensive in the worst spots; and in other parts, where the lung was still firm, it was of a green hue. No attempt, in this latter case of mine, had been made by nature to effect separation; but Laennec mentions that a gangrenous piece sometimes detaches itself, or is detached from, the surrounding parts;—just like a slough from caustic, That is an apt illustration of the appearance; because although the patches in my case were not separated, yet, if they had been, such would have been the state. The gangrenous part becomes dry and shrivelled;—just like a spot to which caustic has been applied; or it degenerates into a putrid paste like mud. The surrounding structure is inflamed; as in other parts of the body when nature attempts a separation. When a dead part separates from the living by inflammation, you know that the latter ends in ulceration; so that the dead part is left without any connexion with the living. The living part disconnects itself; the dead part becomes isolated; and is afterwards separated. If nature succeed, as she does sometimes, a cavity is often found where the gangrene existed; and this cavity has a lining membrane. Sometimes no cavity is left, but a cicatrix is formed; and the whole appears to have grown up together. This appearance has been perfectly well described by Laennec, and by others. In some instances, the separated portion makes its way into the pleura, and pleuritis is induced; and pleurisy, with effusion and pneumathorax, are the consequences.

In my two cases, the disease was marked by a sudden prostration of strength; a cadaverous alteration of the face; great feebleness of pulse; and an intolerable fœtor of the breath and sputa. One of these cases occurred in a man, who had long suffered from a loud hollow cough, with a copious frothy expectoration. The other occurred in a woman, who laboured under an encysted tumour of the pancreas. In her case a slight cough came on, which attracted no attention; and at last symptoms of gangrene appeared. These general signs will point out the disease, I imagine, much more than auscultation; but it is evident, that the gangrenous part must have less respiratory murmur than natural; that the part around will afford crepitous rattle, and that the cavity will give rise to pectoriloquy. If inflammation be set up for the removal of the slough,—causing the bronchial tubes to be affected,—there will be a metallic tinkling; but I imagine that far better evidence than this will be derived from the aspect of the patient;—from the cadaverous look, and the great debility; together with the intolerable stench both of the breath and the sputa.

When a part has become gangrenous, of course there is no hollow sound on striking the chest; and no respiratory murmur; but that may arise from a thousand causes; and if there be any inflammation around the dead part set up to cause its separation, there will be a crepitous rattle; but no one could tell that this resulted from gangrene, rather than from anything else. There are, however, certain signs observable by the other senses, which alone would make you believe there was gangrene; and these, together with the stethoscopic signs, make the thing pretty certain. Sometimes the sputa, in this disease, are white and opaque at first; but they grow sanious, purulent, brown, and greenish; and they are, from the first, nearly as fœtid as when the fœtor becomes gangrenous. We all know the fœtor of a gangrenous part; and before the sputa have that peculiar fœtor, they are nevertheless fœtid enough. This, however, cannot be much depended upon; nor can the fœtor of the breath. I have seen other diseases attended with extreme fœtor, but without gangrene; and I have seen extreme fœtor of the breath and sputa, without any danger whatever. Sometimes, in bronchitis, the fœtor both of the breath and sputa will be extreme. I mentioned having seen a young lady, who was in tolerable good health, except that she spit up a little; and this expectoration was horribly offensive; so that to stand near her was extremely unpleasant; yet she was walking about, and looking well. I saw a case of this fœtor of the sputa, and smelling of the breath, in a person who died of phthisis. Occasionally the matter formed in phthisis is of such a quality, that the fœtor is much like that of the fæces. There is no danger *necessarily* from the extreme fœtor of the sputa; neither is there necessarily gangrene; but if, conjoined with this, you observe that the sputa are bloody, brownish, or greenish,—something like the discharge from a sloughing part; and when you observe anything like little green fragments of lymph, together with a weak pulse, an elongated countenance,

and a cadaverous aspect; and when the patient is in the state in which you see people when they are sinking from mortification in any other part;—then there can be no doubt of the nature of the disease. But the mere putrid smell of the breath, and of the sputa, certainly ought not to make you conclude that the patient must have gangrene of the lung; or, indeed, be in any danger. In the two cases of this disease which I had under my care, the persons became, in a few days, very much emaciated. The pulse suddenly fell; the temperature declined; and the countenance expressed the most extreme exhaustion; but, at the same time, I must honestly tell you, that I had no idea, in either case, of gangrene of the lungs; and was much struck with the appearance after death; I could then compare it with the symptoms I observed during life. One patient had had chronic bronchitis for a long time; which bronchitis appeared sufficient to kill him; and the other was dying of the disease of the abdomen; and complained of a trifling cough, which had not attracted my attention. They were hospital patients; and it was only when opening them, that I discovered the disease. I smelt something very horrible when near them; but I ascribed it to another cause. When gangrene does exist in the lungs, it is not necessarily fatal. There have been cases clearly of gangrene of the lungs, which have been recovered from; though all the symptoms I have mentioned occurred. Nature is sometimes sufficient, when supported by good nourishment, to get an individual through an affection of this description; and to cause a separation of the gangrenous part.

There is nothing peculiar in the treatment. You must support the strength of the patient, as in other cases, where there is an absence of inflammation, and the presence of extreme debility.

HÆMOPTYSIS.

There is another disease of the substance of the lungs, and of the membrane of the air-cells; which, after death, presents very much the appearance of inflammation; and before the time of Laennec, was frequently, no doubt, mistaken for inflammation. This disease is the effusion of blood into the air-cells; and I shall now, therefore, speak of hæmorrhage from the air-passages (called *hæmoptysis*; from *αιμα, blood*, and *πτυω, to spit*). This will be in conformity with the plan I have hitherto pursued; namely, that of speaking first of inflammation, and then of certain other affections; among which is hæmorrhage.

This hæmorrhage may proceed from the mucous membrane of the air-*passages*; or from the air-*cells*. In the one instance, it is not necessarily a dangerous disease; in the other it is highly dangerous, in as far as it is likely to be very profuse. The greater number of cases of hæmorrhage from the air-*passages*, arise simply from an effusion of blood from the mucous membrane of the bronchial tubes. The blood which is spit up is florid,—generally of a bright scarlet colour; and it is frothy. It is spit up with a tickling in the throat; the pulse is quick; and there is heat in the chest. This is the description of hæmorrhage, which takes place most frequently in

young adults; between the age of puberty, and the full adult period of five-and-thirty. It occurs, particularly, in that period during which the chest expands,—in which we "spread," as they say. The first part of life is disposed to hæmorrhage from the *nostrils*; the second hæmorrhage from the *lungs*; and the third to hæmorrhage from the *abdomen*.

The disease, in general, is easily made out. The only difficulty is to distinguish between it and hæmorrhage from the stomach; but the latter is usually marked by a discharge of *black* blood. The blood is either discharged from the veins of the stomach; or it lies in the stomach so long after its escape from the vessels, that it acquires a venous hue. From the one cause or from the other, blood, when discharged upwards from the stomach, is generally black; and has also generally lain there long enough to be coagulated;—it is in clots, larger or smaller. Frequently, too, it appears in the fæces;—it passes through the pylorus, and you see it in the motions. Besides that, it frequently comes up with the food, —with the contents of the stomach; and, when it does not, still it comes up with sickness and nausea, if not with downright vomiting, You know that people may have a discharge from the stomach without vomiting. Sometimes a quantity of fluid comes to the mouth, and even portions of food come up without vomiting; and so it is with the blood. Occasionally, however, it comes up with decided vomiting. There is frequently a great uneasiness about the præcordia, and a fulness about the liver and stomach. These symptoms are all absent in hæmorrhage from the lungs. The blood, too, is florid; and, instead of being mixed with food, it is frothy; and is necessarily mixed with air, in consequence of the parts from which it comes. These parts will not allow it to stay so long as the stomach; and it generally comes up as soon as it is poured into the passages; and therefore it is seldom coagulated. Occasionally, however, you do see a little coagulum; for it will sometimes lie sufficiently long to become solid and black, before it comes up. In addition to this you have pectoral symptoms in hæmoptysis. In the stead of nausea and vomiting, you have a stitch in the side, a little cough, and a tickling in the throat.

This species of hæmorrhage occurs more particularly in those persons disposed to consumption; with a fine soft skin, soft hair, and a sanguineous temperament; and, among these, it occurs more particularly in those who have a florid colour. The disease sometimes occurs in those who have evident signs of inflammation; sometimes it occurs where there is hardly anything particular to be perceived about the individual; and sometimes it occurs in those, in whom there appears to be great strength of system.

It is produced by all the causes of inflammation. A blow on the chest, or catching cold, will give rise to it; but it very often takes place without any observable exciting cause. Violent exercise, and excitement of mind or body in any way, will occasionally produce it; but sometimes it occurs without any apparent cause. It will return

at certain periods,—at intervals of a month or a twelvemonth; and at last it will cease altogether; and the patient will then become the subject of consumption. It is very common for consumption to take place in patients who have had several attacks of spitting of blood; but this is not a necessary occurrence. I know many persons who expectorated blood, fifteen or twenty years ago; and they are now as well as I am. If a person spit blood, he should avoid every thing which causes an irritation of the chest; but he ought not to condemn himself; for I have known persons spit a considerable quantity, again and again, and yet afterwards do perfectly well. If you listen to the chest, when the blood is in the air-passages, you will hear sibilous and sonorous rattles. When these patients die, and you examine them, you find nothing unusual. If you examine a person who has died of phthisis, and who expectorated blood before there were marks of phthisis, there will be found nothing to account for the hæmorrhage. It is a mere effusion from the mucous membrane; which will pour out blood without a rupture of the large vessels. Small ones will sometimes throw out a gush of blood. When speaking of hæmorrhage in general, I mentioned that you will sometimes open persons who have died of hæmorrhage from the stomach and intestines, without being able to find a vessel ruptured. It was clearly an effusion from a thousand minute orifices.

Sometimes, however, hæmorrhage from the lungs is not of this description;—does not take place from the mucous membrane. It is a particular disease, occurring in the air-*cells*; and in that case the hæmorrhage is generally very profuse;—far more so than in other cases.

On examining patients after death, (for they frequently die of the disease in this form), you find that certain parts of the lung have become exceedingly hard; and, if they be near the surface, you see the lung through the pleura looking very dark. The lung looks variegated; and there are large black patches here and there. If they be deep in the substance of the lung, you cannot discover their extent; but on taking hold of the lung, you feel hard patches;—some as large as nuts, and some as large as walnuts. On cutting into them, you find they are very red, and of a deep colour; and no doubt, in former times, they have been mistaken for so many large circumscribed inflammations. These parts of the lung may be from one to four cubic inches in extent, and even much larger than that; and the redness is a deep damask hue. Nay, it is sometimes so intense as to be black;—as dark as a black clot of blood. This portion of the lung is not only hard but heavy; and it will not crackle under the finger.

On cutting a portion of the lung in this condition, you observe the same granular appearance which, I stated, takes place in inflammation of the substance of the lungs. In inflammation of the air-cells, before the part is completely solidified, it has a granular appearance; which no doubt arises from blood being effused into the air-cells, and there coagulating. The blood coagulates in each air-cell; the

minute coagulum of each cell becomes a little grain; and furnishes this granular appearance. The diseased parts are usually quite circumscribed; so that the surrounding portion of the lung is in every respect healthy. In inflammation of the substance of the lung, the diseased appearance is gradually lost in the healthy lung; but in this disease, in almost every instance, the affection is entirely circumscribed; so that within a hair's breadth of it (I might almost say) the lung is perfectly healthy. The case is really one of severe ecchymosis; only that the blood is effused, not into the cellular membrane, (as it is in ecchymosis of the surface of the body), but into the air-cells. That the blood is effused into the air-cells, and not into the cellular membrane of the lungs, is proved, as I mentioned, from the circumstance that the blood is spit up. If the blood were not in the air-cells, but in the cellular membrane, it could not be spit up.

The great symptom of this affection, during life, is spitting of blood. Besides the symptom of repeated and copious hæmorrhage, you have cough; difficulty of breathing; heat in the front of the chest; flushing in the face; and at length great paleness of it. There is also a tickling sensation in the bronchia; just as when hæmorrhage comes from the air-passages. You cannot tell whether the blood comes from the mucous membrane, or from the air-cells, by any of the *general* symptoms; but when it is effused in a very large quantity, there is a *probability* that it comes from the air-cells. It is said that as much as ten pints of blood have been discharged from the lungs, in this way, in forty-eight hours; and Laennec says that he has seen thirty pints thus spit up in fifteen days.

The disease may exist in so slight a manner, that no external hæmorrhage takes place. I have known this state of the lungs to occur, without any spitting of blood. The blood has been effused into the air-cells, and coagulated there, and produced the hard lumps I have described; and not having been followed by subsequent attacks, no blood has been expectorated. Old persons, who were never known to have spit up blood, have died from other diseases; and this appearance has been found in their lungs.

Laennec has termed this disease *pulmonary apoplexy*. As this lesion evidently results from sanguineous exhalation into the air-cells, and perfectly resembles the cerebral sanguineous exhalations which produce apoplexy, he has thought it right to designate it "pulmonary apoplexy." Now I think you will agree with me that this is an exceedingly absurd name. So far as there is a great local congestion of blood and effusion, the phenomena are the same as are observed occasionally in apoplexy. But apoplexy is not a state of parts. It is a loss of sense and motion; occurring, for the most part, suddenly. Apoplexy is a stroke that causes persons to fall down senseless and motionless. In the words of Cullen, "Motus voluntarii fere omnes imminuti; cum sopore, plus minus profundo; superstite motu cordis et arteriarum." That is what we mean by "apoplexy." If a person be said to have apoplexy, and you ask the individual how he knows it, the answer is,—"He has lost all sensation and power of motion.

There he lies in a dead state; and you cannot rouse him." Apoplexy does not consist in the morbid state of the brain; but in the symptoms which we observe; and those symptoms will take place from depression of bone, or from an effusion of fluid. Any thing which compresses the brain will produce, not congestion of blood, but a loss of sense and motion. Nothing of this kind, however, occurs here. There is no loss of sense or motion in this disease; and therefore it cannot be apoplexy. Merely because apoplectic symptoms arise from a congestion of blood in the brain, or from hæmorrhage into it, Laennec has thought proper to call this state of the lung "apoplexy." Apoplexy will frequently arise from a secretion of pus pressing upon the brain; or from a secretion of mere serum;—without any congestion,—without any fulness of the vessels. This is the case when part of a vessel becomes ossified; so that it splits across, and allows the blood to escape into the brain. Thus you may have hæmorrhage without apoplexy; and you may have apoplexy without congestion,—without hæmorrhage. I cannot but think, therefore, that it is an extreme abuse of terms, and likely to cause great confusion, to call this disease "apoplexy of the lungs;" for there is no resemblance whatever between it and apoplexy,—properly so denominated.

It is not long that this disease has been known. Dr. Forbes, in his translation of Laennec, mentions (in a note) that, "in 1816, M. Léveillé appears to have read a memoir on this subject before the Academy of Sciences at Paris; and, in 1817, Dr. Hohnbaum, of Hildburghausen, published three cases of sudden and fatal effusion into the substance of the lungs." He says, the lungs were found distended with dark-coloured blood, partly coagulated and partly fluid; and were almost too large for the chest. In one case, the same kind of blood was found in the bronchia; and in the other in the pleuræ. The cases appeared to be nothing more than a laceration of the blood-vessels; and the patients appeared to die from the effects partly of internal hæmorrhage, and partly of oppression of the lungs, induced by the effusion of blood. They died of syncope and asphyxia. Dr. Forbes formerly described such a case, in his translation of Avenbrugger. From the suddenness with which it occurred, and its appearing to arise from a laceration of the vessels of the lung, producing congestion, Dr. Hohnbaum gave the name of "pulmonary apoplexy" to this particular case. But we must consider that neither sudden death nor effusion constitute apoplexy; for apoplexy is nothing more than a loss of sense and motion. In apoplexy the motion of the heart may continue; but volition has ceased, partially or entirely. There can be no doubt, however, that Laennec was the first *on the Continent* who gave a full and accurate account of the disease; which he did in 1819. The disease was really not understood fully, till Laennec wrote upon it at that time; and he then pointed out the common connexion of this particular state of the parts, with profuse hæmoptysis. Yet it is singular, (and you will excuse my mentioning it, since there was no merit in it),

that I myself published an account of this affection, and gave the symptoms during life, and the appearances after death, some two or three years before that. I had a patient who died of profuse hæmoptysis, which I could not stop. I stopped it for a time, but it came on again and again; and, as he sank, I examined him after death; and found, to my astonishment, the appearances of the lung which I have described to you. I found on the surface of the lungs, numerous hard, circumscribed, dark patches; and, on cutting into them, I found hard solid lumps, of a deep chocolate colour. There were many of them in the lungs. I cut these lumps into slices; and found that they admitted the light through them;—just as a clot of blood will do, if you cut it very fine.

The case (which will shew the course of the disease very well) was that of J. G., aged 35, by business a gardener;—a mild and extremely steady man. He had laboured for two years under dyspnœa, pyrexia, cough, pain of the chest, and bloody expectoration. At length, profuse hæmoptysis came on. Various remedies were prescribed, but in vain; and he ultimately died exhausted. On opening the body, the surface of the lungs presented numerous hard, circumscribed, very dark patches, of various sizes,—from that of a sixpence to the size of a crown. A person not of the profession, would have supposed them so many mortifications. Blood, however, when accumulated in the small vessels, often causes (as Dr. Baillie has pointed out) a counterfeit appearance of mortification in the stomach and intestines, and in many other parts. Such was the nature of these patches. On cutting perpendicularly through them, the hardness and dark colour were found extending into the substance of the lungs (an inch or less); in a form equally circumscribed as on the surface. The intervening spaces were perfectly healthy. This Laennec also remarked. Nearly the whole of the inferior lobe of the right lung, had undergone the same change as the circumscribed portions in the other lobes. This change consisted in a prodigious congestion of blood, which could not be squeezed out, and which gave the dark colour and hardness. The slices were quite diaphanous; and of a beautiful red colour. No other change,—no disorganization, was in any part discernible. It seemed as if the most minute vessels in various parts, had become dilated, as in nævi materni; and had thus allowed the escape of the blood. Had the symptoms been those of acute inflammation, and the blackness not been in detached portions, there would have been nothing singular; nor would there had the disease been simply chronic inflammation; indicated by a frequent pain at the anterior and lower part of the chest, always yielding to blisters, and a large quantity of bloody fluid found in the cavities of both pleuræ after death. But it is surprising that this should occur in patches; and should have induced no suppuration,—no disorganization; but merely hæmoptysis and pain.

There was no great discovery here. I opened the man; the appearances were provided for me; and I described them. I pride

myself on one thing;—that I did not call it "apoplexy of the lungs." I gave it no name. The work in which the case was published, was called the "Annals of Medicine and Surgery;"* and I made an extract from it in my work on Disease of the Heart;—the original publication being now very scarce.

The employment of the ear, in addition to the general symptoms, may be useful in this disease. It is always desirable, when a person spits blood, to know how much disease exists in the lungs; and it is desirable to know whether the blood comes from the bronchial membrane, or is the consequence of such a state of the air-cells as we have noticed; because the latter form of hæmoptysis is far less manageable than the former. In this kind of hæmoptysis (called "pulmonary apoplexy") when only a little effusion has taken place, you have a crepitous rattle; but in hæmoptysis from the air-tubes you have not; and for this reason;—the blood is not in the air-cells. When it is in the *tubes*, you have no crepitous rattle; for that always arises from an accumulation, of some kind or other, in the *cells*. In effusion of blood in the air-cells, you have crepitous rattle *at first*; but where the blood is more *abundantly* effused, you cannot have crepitous rattle; because no air can be admitted. The crepitous rattle, I have no doubt, arises from the air passing through the fluid; and from the air-bubbles bursting one after the other. When so much blood is effused into the different air-cells, that no air can be admitted into them, and the part becomes firm, there is no crepitous rattle, nor any rattle at all. No respiratory murmur, and no morbid respiration is heard; for no respiration can take place long in that part. All that you can detect by the ear is, that the part is not healthy. On striking over the part, you find it sound dead; and on listening you find no sound of respiration; and you learn very well, by the ear, what is the extent of the mischief. In the case I met with, the whole of the inferior lobe of one lung had undergone that change;—had become quite solid. In those days the stethoscope was not invented. A work on this subject, which I shall have occasion to mention, was neglected; and I was never taught to use the ear; and therefore I knew nothing of the symptoms that would have presented themselves, if I had employed that organ. But if I had employed the ear in that case, no respiration would have been heard over a great part of the chest; and on striking there would have been no hollow sound; and therefore I should have known the extent of the mischief. You may learn accurately the extent of the mischief in this disease. You may learn how much of the lung is solidified, by the extent of a *dead* instead of a *hollow* sound on percussion; and the extent to which there is no respiratory murmur. With regard to the *treatment*, that must be the same whether the blood come from *one* part, or from *another*; and therefore it must be for the sake of the *prognosis* that you employ the ear, and

* "Annals of Medicine and Surgery; or Records of the Occurring Improvements and Discoveries in Medicine and Surgery, &c. Edited by John Elliotson, M.D. F.R.S.; and William Prout, M.D. F.R.S. Vol. I. 8vo. 1817."

make a distinction between the two cases;—the one being a manageable kind of affection, and the other extremely *un*manageable.

On the immediate occurrence of hæmorrhage from the lungs, it is right to treat it as inflammation;—to bleed in the arm freely; and to set the patient upright, and keep him so; in order to make him feel as faint as possible. You should keep him in that position, instead of allowing him to lie down. It is safe to apply ice to the front of the chest; and this, I think, should always be done. There can be no impropriety in it. As soon as you have bled, until ice can be procured, you should throw cold water on the chest; and endeavour to produce a contraction of the end of the vessels;—in the same way as you proceed in the case of the womb. But generally the bleeding soon stops; for a patient seldom dies of hæmoptysis at the time. Bleeding at the arm, throwing open the windows and doors, and taking the clothes off the chest, answer very well. The patient should not be allowed to move. He should be made easy and comfortable; but he should not be allowed to move, or to speak. I have often made persons persevere, for a fortnight together, after dangerous hæmorrhages;—making them write for whatever was wanted. It is proper to starve the patient; to give him nothing but plain water, milk and water, lemonade, or things of that description; and it is surprising how patients, in this disease, bear cold. I know not a single instance of a person suffering inflammation of the chest, from all this exposure; notwithstanding that, in other circumstances, he would, in all probability, have suffered severely.

The best internal medicine, by far, is the superacetate of lead; and this must often be given in considerable quantities, before it will stop the hæmorrhage. Within a month, I have had three cases of hæmoptysis; in which I have been obliged to give as much as three grains every four hours, before I could fully stop the discharge of blood. It is always safe to begin with *one* or *two* grains, every *six* hours; but if the hæmorrhage does not stop, but returns every day, it would be right to give such a quantity as this every *four* hours; and if that does not stop it, you may give *three* grains every *three* or four hours, with perfect safety. In all the three cases, the last mentioned doses were given; and no inconvenience was felt, except from constipation; which was remedied, every day, by some laxative. If you do not attend to the state of the bowels, and procure a motion every day, the patient may become the subject of colic; but if you administer croton oil, or castor oil, or some purgative that contains no sulphuric acid, there will seldom be any colic or pain of the bowels; which is very troublesome. Some persons give opium, to prevent griping; but I have not done so; because I have not found it necessary.

Some persons give the lead in a *liquid*, and some in a *solid* form. I have not exhibited it liquid, because it is very nauseous; and it answers just as well solid. It mixes up with the extract of colocynth into pills, very well; and I have seen the stomach bear it, if given in a pill, much better than in the fluid form. That is the case with all

acrid and nauseous things;—the stomach can bear a pill the best. If the patient's stomach be disposed to reject it, it is useful to give one or two minims of hydrocyanic acid, three or four times a day. If you be giving the lead only three times a day, then you might give hydrocyanic acid three or four times; but if you be giving the lead every four hours, then you cannot give the prussic acid so frequently. You will find the dose required to prevent the vomiting, exceedingly various. In some, it will be prevented by one minim, three or four times a day, taken before the lead; and in other cases, two, three, or four minims, will be required. Of all medicines to prevent others from irritating the stomach, I know of none equal to hydrocyanic acid. Some apply blisters over the chest; and they are very useful in these cases *at last*; but the application of cold, by means of ice, is better. If the means which I have recommended be adopted, you will generally be able to control the affection. Treat it, in the first instance, as an *active* inflammation; and when the hæmorrhage is very considerable, treat it as a *passive* inflammation; or rather combine the two modes of treatment. Do all you can to prevent an excitement of the pulse, by bleeding from time to time, and keeping down the circulation; and at the same time adopt the treatment for passive inflammation, by producing a constriction of the vessels.

ASTHMA.

Before I speak of *organic* diseases of the lungs,—those in which there is a new deposition, or a transformation, or lesions of the substance,—I will consider *functional* diseases of those organs. I will speak first of asthma, and then of hooping-cough. Asthma is often connected with bronchitis and hooping-cough; and very often with inflammatory diseases; but not *necessarily* so. Both asthma and hooping-cough are frequently unconnected with inflammation; nor is there any appearance, after death, that will explain the symptoms. They are frequently specific and functional diseases.

By asthma (from *ασθμαζω, to gasp for breath*) is meant a spasmodic difficulty of breathing;—a spasmodic affection of the organs of respiration, below the larynx and trachea. You will recollect that it is frequently united with organic diseases, or with inflammatory states; and that frequently it is merely the result of irritation; so that you may have it without any organic disease, or any inflammation at all. In a case of asthma,—pure, genuine asthma,—you have a violent sense of constriction of the chest, with a loud wheezing respiration;—heard without putting your ear to the chest, or employing a stethoscope. You hear a patient, at some distance, wheezing and breathing for his life. Such an attack as this, is soon accompanied by a short and difficult cough; but as the sense of constriction goes off, the cough becomes freer and deeper; and there is some expectoration.

During this attack, the face is pale, elongated, and pinched; the nose and extremities become cold; the pulse is found to be small and quick; and I have frequently observed it to be irregular. The skin, throughout the body, becomes rough, from the retrocession of blood

from it; horripilatio takes place; and the patient looks as if he were dying. He is cold and pale, and gasping for breath; and in such an agony, from the want of it, that you would think him dying; yet, in the greater number of cases, there is no danger whatever. Such an attack as this, may last only a few minutes; or it may last several hours. It generally takes place in the middle of the night. The gout, when it first attacks an individual, generally does so in the middle of the night;—that is to say, at two or three o'clock in the morning; and this is generally the case, likewise, with asthma. When it first invades, the patient jumps up in bed; throws off the clothes; draws aside his curtains, if he have any; often goes to the window and throws it open also, as he does the door; and stands at the window, to get as much air as he possibly can. After a certain time, he finds that he breathes more easily; can take a deeper inspiration; begins to cough more deeply, and to expectorate; and then he goes to bed again a great deal better. Very often, at the same time the next night, the scene is repeated. When a person is subject to this occurrence very often, the breathing, for the most part, is not quite free in the intervals. It is generally difficult; the patient feels that all is not right; and, at the same time, there is generally a great degree of flatulence. A large quantity of wind is made, undoubtedly, in the stomach. It cannot be generated by any simple chemical process;—that is out of the question; for a person in this condition, just like an hysterical woman, becomes, in a moment, filled with wind; and sends forth torrents, as if there were no end to it; and this occurs without any thing being in the stomach, to promote the production of it. A great quantity of wind is disengaged from the stomach and intestines; but I think there can be no doubt (and John Hunter was of this opinion) that air can be secreted like a liquid; for you see a woman in a moment, from a passion of the mind, swell out and pour forth torrents. It must evidently have been generated at the time; for a chemical process could not have been so instantaneous. This will be the case whether there is any thing in the stomach, or not; and I believe the wind, in these cases, is always inodorous. The gases from the alimentary canal, have been analyzed by the French; and their nature has been ascertained from the contents of the stomach and intestines. An account of this you will find in Majendie's work; but whether the wind just referred to has been analyzed, I do not know. I think it has not. At the same time, there is generated a large quantity of liquid;—patients generate both wind and water. The water is in immense quantities, and quite pale;—containing very little saline or animal matter. They are as pure specimens, both of wind and water, as can be produced (I suppose) from the animal body.

Some persons have these attacks only at certain seasons of the year; and some only in particular places. If they be subject to the affection, they are rendered far more liable to it by eating what is ill-suited to their stomach;—eating articles which they have found will not agree with them. Sometimes indigestion precedes an attack

of this description; sometimes there are symptoms of disturbance of the nervous system;—such as sleeplessness and headache; and sometimes there is a great itching of the skin. These circumstances occasionally precede the disease.

The occurrence of the disease is very various. Some have it only for a few nights; and some for many weeks. It is a disease which attacks all ages. I have seen it, over and over again, in infants at the breast; where, from the very slightest degree of bronchitis,—the slightest catarrh, they have been seized, at different periods of the day, with violent wheezing; and that wheezing has ceased almost as suddenly; and therefore I have no doubt it is asthma. I have seen several instances of it, as I suppose, in boys below puberty and above it; and very frequently it attacks young adults. The recurrence of the disease may last many years. Persons may be subject to it for many years; and then it may cease entirely, without any ill consequences whatever;—without being followed by any other disease. A patient may, at one period of his life, entirely cease to be asthmatic; and this complete cessation of the disease may occur at all ages. With some persons, asthma occurs only in particular seasons, from particular circumstances, and from particular states of the weather; but with some the tendency to it is so strong, that they are sure to have it wherever they are. There are always exciting causes sufficient to produce the disease in them;—so extreme is their liability to it. I have sometimes seen it attended with very great pain. There has appeared to be a violent spasm of the respiratory muscles, so that patients have had violent pain; and yet, without any bleeding,—simply from stimulating remedies,—this pain has ceased.

Although this which I have now described, is the regular form of the disease, yet (like epilepsy) it sometimes puts on very great irregularity. Some persons, in the fit, will make a crowing noise. Some will have a number of deep inspirations successively; and then they will suddenly cease to breathe. There is every sort of variety that you can imagine; but still, no doubt, they are all deserving of the name of asthma.

The disease is literally pure spasm, and does not necessarily depend upon any organic cause. But it may be combined with any inflammatory disease of the chest; and it may be combined with any *organic* disease of the chest. Even the slightest pressure, in some people, will cause this affection. I believe I mentioned formerly, that Mr. Lawrence has described a case, in which violent paroxysms of asthma were induced, simply by an aneurism of the innominata;—causing the least possible degree of pressure upon the trachea. The disease with which asthma is most commonly united, is chronic bronchitis. When persons labour under the latter affection, besides constant difficulty of breathing, they are subject to great aggravations of this difficulty, from time to time;—particularly at night. As in this case they spit up a great deal, the affection is called, by the old writers, *humoral asthma*. But you continually have chronic asthma without chronic bronchitis; just as you may have the latter without any ten-

dency to a spasmodic affection. Sometimes asthma is united with pleuritis and peripneumonia; and on bleeding such patients, you have buffy blood; but in a case of genuine asthma, it is rare for the blood to be buffy. I do not know that it *ever* is so. Asthma is frequently seen united with diseases of the heart; but then it is to be remembered, that nothing is more common, in organic diseases of the heart, than for *chronic bronchitis* to exist. The heart is seldom organically diseased, to any considerable extent, without the bronchia being more or less inflamed.

The disease is easily distinguished from hydrothorax. If you strike all over the chest, you have a clear sound; and if you listen, you have respiration all over the chest;—which you cannot have if any part of the cavity be filled with water. You distinguish it from bronchitis, by the absence of sonorous and sibilous rattle, except in the upper parts. Down below, throughout the rest of the chest, you do not hear those peculiar sounds of bronchitis; or, if you do hear something like them, they suddenly cease; and then there is the sound of health; but while bronchitis lasts, you have sonorous and sibilous rattle; and these only subside either from the interference of art, or the disease itself ceasing. In general, you will hear a loud respiratory murmur all over the chest;—louder than it should be. The absence of other diseases, together with the suddenness of the attack, the suddenness of its cessation, and its extreme aggravation from time to time, will enable you to form your diagnosis.

The prognosis in this disease, so far as the *paroxysm* is concerned, is generally good; but I have seen people die from pure spasmodic asthma. I recollect a young man, who had been asthmatic, being brought to the hospital in a great fright; and, when I saw him, he was dying. He could only breathe while on his knees and elbows. No signs of any other disease were found during life. He was cold and pale, and the pulse was not to be felt; and, in the course of two or three hours, he died. He had been accustomed to asthma; but this fit produced such a severe asthmatic state, that he did not survive. On opening him, no signs of disease were found; but the lungs were all distended;—had lost their contractile power, so as to be unable to collapse; and were as light as a feather. I have read accounts of death from asthma; but it is a rare occurrence indeed. The prognosis, however, must be unfavourable as to the *termination* of the disease. Some persons will be liable to it for life, if they live in particular situations, in spite of all you can do. You have a prognosis to make as to the *paroxysm*, and one as to the *duration* of the disease. The one is favourable, and the other *un*favourable; but then the prognosis respecting the distant event, must depend upon the existence of other diseases. The prognosis, so far as the asthma is concerned, is not bad. People labouring under this affection, often live to a great age; and the disease often ceases of itself. But you must always consider, in these cases, that there may be some other disease; —chronic bronchitis, chronic pneumonia, or disease of the heart; but if not, there may be a tendency to phthisis; and all these things

must be taken into the account, in forming a prognosis. Dr. Heberden mentions a curious case of the cessation of asthma, after it had existed some time; and he also mentions other cases of persons suddenly ceasing to be asthmatic; and never having another attack, though they have lived thirty years afterwards. I have myself known instances of its cessation, after having existed a considerable time. But we can never prognosticate this. If it turn out so, it is all very well; but I think we have no means whatever of *predicting* that it will thus terminate.

The predisposing causes of the disease are not known. Very often it attacks those who are thin and pale; but they have pure, simple, spasmodic asthma. It as frequently, however, attacks those who are short and full,—bulky; and these generally have a combination of asthma and chronic bronchitis. They expectorate a great deal;—have humoral asthma. Of the real predisposition, however, we certainly do not know the nature. We know it is often hereditary. Asthma attacks many, whose parents, one or both, or whose grand parents, have had the disease. It runs in families. With regard to the *exciting* causes of the disease, they are (in general) cold and damp, and especially fogs. Some persons have it only in cold weather; others have it only in damp, foggy, moist weather; but there is a great variety in this respect. Some persons have it only in summer, and are all the better for cold weather; and some never have it but in particular situations. Most people are better in the country, if it be a dry place; but some are better in London; so that persons who have made their fortunes, and retired to the country, have become asthmatic; and have been obliged to return, and live in London again. I have read of cases, where parties have been obliged to go back to an old house in Thames Street. I only mention it, because I recollect a particular street; and that as damp and dirty a street as there is in London. In some persons, this disease is only induced (as it would appear) from particular exhalations from the vegetable kingdom;—the emanations from grass in flower. These are the people who have asthma only in summer; but by far the greater number have the disease aggravated in winter, and are pretty well in summer. Some, however, are never asthmatic till about May or June. I should think all these cases may be resolved into that particular form of disease, which has been called *hay-fever*, or *hay-asthma*. In some cases, there is a simple spasmodic affection of the breath; and in others, there is a violent catarrh, united with the spasmodic affection. This is a disease which has only been noticed of late years; and respecting which I have some curious facts to adduce.

Certain writers have spoken of what they call "a summer cold;" —*catarrhus æstivus*. The first medical composition that I read upon the subject, and the first that I ever knew to exist, was by Dr. Bostock, the celebrated chemist. It was from him I learned that some writers spoke of catarrhus æstivus; but I do not know to whom he alludes. Dr. Bostock states, in the fourteenth volume of the "Medico-Chirurgical Transactions," that at a certain time of the year he

begins to sneeze,—has a "running" of the eyes, and all the other symptoms of catarrh; and that these continue for a certain length of time, wherever he is, and whatever he does. In a second paper, published by him in the same work, he again refers to the subject; and relates his own case at considerable length. Before that time, I had heard people talk about "hay-fever" and "hay-asthma;" but I could not comprehend what they meant. I was told that certain distinguished personages had "hay-fever." It appears to be quite an aristocratical affection;—not at all visiting hay-makers, or those who have to do with hay and straw. I never met with such a thing in practice; and it appeared to me to be a highly gentleman-like, and indeed, (I may add) *noble* affection. I could not tell what to make of it; and I disregarded it entirely;—supposing it to be a sort of aguish or hypochondriacal affection, of which those who had little to do, frequently became the subject. I had no idea that it was an affection of the chest, until I read Dr. Bostock's paper. I happened, however, to be attending in a family, where the mother of the lady was said to have been the victim of it many years. She was a very sensible and superior woman; and she stated that, at a certain time of the year, when the grass came into flower, she was dreadfully distressed in breathing; and was obliged to leave her house, and go to as barren a place as she could find at the sea-side; and there she obtained comparative ease. She told me this had been the case for many years; and that she had tried everything in vain; for nothing did her good. She was not the only member of the family afflicted with it; for an uncle, some of her nephews and nieces, and some of her cousins, laboured under it. It was decidedly an hereditary family matter.

As there are some curious features in these cases, I alluded to them in a clinical lecture delivered at St. Thomas's Hospital. I knew that the course of which that lecture formed a part, was being published; and I thought the shortest way to make the thing known, would be to mention it then. The consequence was, that I received several exceedingly kind letters, from gentlemen unknown to me; giving me facts upon the subject; and as the matter is very interesting, I will read a few of them. One of these letters was received from Mr. Gordon;—a surgeon residing at Welton, near Hull, Yorkshire. He stated that, in the "Medical Gazette," for 1829, he had described the very same thing.* I was not aware of it at the time; or I should have felt it a great pleasure, as well as my duty, to refer to it. He says:—

"I have this evening received Number 186 of the "London Medical Gazette," dated June 25 [1831]. It contains the report of a clinical lecture which you delivered at St. Thomas's Hospital, in March last, on the subject of hay-asthma.

"In consequence of your expressing a wish to receive information on this extraordinary complaint, I have taken the liberty of troubling

* See the "Medical Gazette," Volume viii, Page 411.

you with this letter. I beg leave to state, that I have witnessed several instances of hay-fever, and hay-asthma; and, in the eighty-seventh number of the 'London Medical Gazette,' bearing date August 4, 1829, I published a short account of the nature, symptoms, causes, and treatment, of these curious disorders. In that memoir I have observed, that the best preservative against their attack, is the cold shower-bath. For the last two seasons, however, while employing this, I have administered the sulphate of quinine, with the sulphate of iron:—the former in doses of two or three grains, the latter in doses of one grain, three times a-day. The success which has attended this prophylactic treatment, has exceeded my highest expectations. With two of the most severely afflicted of my patients on whom it has been tried, it has answered so effectually, that both of them have this year been able to walk through a rich meadow, without suffering in the slightest degree; although formerly, if they had ventured out into such a situation, they would have brought upon themselves all the agonies of spasmodic asthma. I hope you will do me the honour to read over the description which I have given of hay-asthma, in the above-named Medical Journal;"—and so on.

"The symptoms I have related, were taken principally from the cases of * * * * * * *. These two gentlemen have been annually attacked with hay-asthma, for the last fifteen or twenty years. They consulted Dr. B., and most of the eminent English physicians, as well as several practitioners on the Continent; but derived no relief from what was prescribed for them. By means, however, of the shower-bath, the quinine, and iron, they have, for the last two years, obtained a complete emancipation from their tormenting disorder."

Another letter is from a practitioner at Bristol, who says,—"I knew nothing about hay-fever, as any definite disease; but your description of it is, with little exception, a very accurate detail of what I have suffered, every June, for several years."—Here was a gentleman who had been ill every summer, for several years, without being aware what his particular complaint was.—"Were I not," he proceeds, "at the present time, annoyed by this troublesome affection, I should probably not have found leisure to give you the trouble of reading any thing on this subject.

"The attack generally begins, with me, at the latter end of May; with great itching of the eye-lids;—particularly at the inner canthi; from which I regularly, during this month, extract some cilia, which grow very near the cornea, and increase the irritation. My most troublesome symptom is sneezing. It is of a violent kind; and often continues eight or ten times. The defluxion from the nostrils is most copious at these periods of the day; while, in the intervals, I have no catarrhal symptoms. Expectoration of clear mucus is also considerable. My sneezing-attacks are sure to come on while I am visiting my patients;—to my great annoyance. This comfortless state generally continues five or six weeks; but is never sufficient to

interrupt any of my employments, or render any confinement *necessary*; though I am always free from it when in the house. How far grass or hay has any thing to do with this affection, I cannot satisfactorily determine. There certainly are several hay-fields within a quarter of a mile of my house. The *air* seems to make me worse; and an open window is my abhorrence, while I am thus indisposed. Last week I spent an hour or two in a friend's hay-field, with a party of ladies; but the syllabub, the ladies, and the pastoral sports, had no amusement for me; and I was glad to get to a corner of the park, where my streaming eyes and nostrils, and noisy sternutations, might escape both remark and commiseration. Certainly, during that afternoon, in the hay-field, was the worst attack I have had; but whether it was the *air* which was cooler than usual, or the *hay*, I could not tell. I must however confess, that my *fancy* on the subject has always leaned more to the effect of some subtle particles, of an irritating nature, than to the ordinary causes of catarrhal affections. My lungs are rather asthmatic;—formerly I had a good deal of asthma. I have never found time to try any remedies; but shall certainly bear in mind yours, should I have this visitation next year."

I have another letter from Dr. Bulman, of Newcastle-upon-Tyne. He has given me several cases; of which the following is one:—

"D. B., aged 36, is of a spare but robust habit, and free from any constitutional or hereditary affection;—except, perhaps, the gout. He has been liable since his seventh year, if not sooner, to annual attacks of the disease so ably described by Dr. Bostock, under the name of 'catarrhus æstivus,' in the fourteenth volume of the 'Medico-Chirurgical Transactions.' The disease invariably commences (about the second or third week in June) with a sense of uneasiness, heat, and itching in the tunica conjunctiva; but the itching is more particularly severe along the tarsus, and in the caruncula lachrymalis. On examination, this membrane is found to be considerably inflamed; but, except in the severer attacks, the inflammation does not extend to the eye-ball. The symptoms before mentioned are attended with watering of the eyes, increased secretion from the meibomian glands, a sense of fulness or rather distention of the eye-ball, intolerance of light, and weight in the forehead. The itching gradually increases in violence, till it becomes almost insufferable;—compelling the patient, notwithstanding every resolution to the contrary, to rub his eyes; by which it is always considerably allayed.

"In the course of a few days, but sooner if the patient has exposed himself to the sun, the inflammation extends to the schneiderian membrane of the nose; and is attended with itching and stuffing of the nostrils, increased secretion of mucus, and violent paroxysms of sneezing; which are also excited by dust of any kind, exposure to the heated external air, effluvium of new-made hay, and the odour of the bean-flower;—perhaps, also, by other odours. As the disease continues to advance, the membrane of the fauces and

lungs is affected;—giving rise to a sense of dryness and extreme itching or pricking in the throat, to slight cough, with tightness of the chest, and difficulty of breathing; but there is little or no expectoration.

"There are several paroxysms daily; commencing with intolerable itching and tingling of the eye-lids, and followed by the most violent fits of sneezing, accompanied by a copious discharge of mucus from the nasal passages. After this the patient obtains a longer or shorter respite; for the paroxysms recur at uncertain intervals; save that one invariably takes place about an hour after rising in the morning. The tightness of the chest and difficulty of breathing, though sufficiently distressing, have seldom been very urgent; but on two occasions they rose to such a height, that the patient conceived himself in danger of instant suffocation. In severe attacks the eye-lids become œdematous. During the whole course of the disease, the patient is languid and listless; and, though restless, is averse to motion. His temper is more irritable than natural; but his pulse is scarcely, if at all, affected. His bowels are regular, and his appetite rather increased than diminished.

"The disease continues till about the end of July, or the beginning of August; when it almost imperceptibly declines; and it is remarkable, that the patient is then able to expose himself to the hottest sun, without the recurrence of any of the above detailed symptoms;"—shewing, of course, that it does not depend upon the temperature;—"and indeed, during the violence of the disease, exposure to the open air early in the morning, and in the evening after sun-set, causes but little inconvenience. The patient has had attacks of this disease in France, Switzerland, and Italy. In the two former countries it was as severe as in England, but not more so; and it is extraordinary, that in Italy, notwithstanding he was daily exposed to the powerful sun of Rome, in the month of June, the disease, though it began earlier, was nevertheless considerably milder, and also of shorter duration, than elsewhere.

"Most of the internal remedies mentioned by Dr. Bostock, have been tried; but in vain. Bathing in salt water, both cold and tepid, has been had recourse to. The former is apparently without effect; the latter has seemed serviceable only so far as it has relieved the tightness of the chest, and the difficulty of breathing. Of *local* remedies, the only one which has proved of any efficacy, is the Unguentum Hydrargyri Nitratis, properly diluted. This, though it occasions considerable pain when applied to the eye-lids, has always greatly allayed the itching and smarting; and has even seemed (probably by being carried into the nostrils with the tears) to diminish the irritability of the schneiderian membrane, and hence to lessen the violence of the sneezing;—a most distressing symptom. The Vinum Opii was tried, many years ago, without any benefit;—as in the case of Dr. Bostock.

"With respect to a residence at the sea-side, it may be observed, that the only instance of the disease attacking the patient previously

to the usual period, was in the last week of May, 1829, during hot weather;—while he was residing, for a few days, in an airy house, situated on a cliff overhanging the German ocean. The attack, however, was slight, and lasted for two days only; but again returned at its usual period in June. As to diet, the patient is decidedly worse when living low.

"The above detail was written some months ago," continues Dr. Bulman; "and I am happy to state, that the patient almost entirely escaped the disease this year;—by merely commencing, some time previously to the expected period of attack, to anoint the eye-lids at bed-time with the ointment; and by bathing them occasionally, during the day, with a collyrium composed of rose-water and acetate of zinc; and after this had dried, smearing them with simple spermaceti ointment, to remove the stiffness left by the collyrium.

"I have only heard of one example of this curious disease, in this neighbourhood. The patient is a gentleman of fortune; and the instant he approaches a hay-field, he is attacked. I have never been able to hear of the disease in the lower walks of life; though my situation, as physician to two extensive charities in this town, has afforded me ample opportunities of meeting with it, did it exist among them. I may add, that none of the patient's family,—that is to say, neither his father, mother, brothers, nor sisters, though originally amounting to thirteen,—were ever affected in the slightest way by this distressing complaint."

There is another case, with which I have been favoured by Mr. Poyser, of Wirksworth:—

"Mrs. H., of middle age, of a full and rather corpulent habit, has been subject for many years to this periodical complaint. The attack generally commences about the middle of June,"—the old time,—"sooner or later; according to the heat or closeness of the weather. A sensation of heat and irritation is first experienced in the eyes and nostrils; accompanied with sneezing, fever, and restlessness. These symptoms (if the complaint increase) are succeeded by a sense of constriction about the chest; aggravated very much by exertion; and increasing, towards night, to a regular asthmatic paroxysm. In the severer attacks of the complaint, there is a permanent wheezing and difficulty of breathing; with an inability of moving, or of remaining in a recumbent position; and accompanied by pain, fever, quick pulse, aud a great degree of general indisposition; lasting for some weeks; and leaving great debility, with an œdematous state of the feet, ankles, &c. The treatment has been conducted on general principles."

To shew the hereditary nature of this affection, I will read a little more of Mr. Poyser's letter:—

"Mrs. P. A., also the mother of a large family, has had this complaint several years. The symptoms, in her case, resemble very accurately those described by Dr. Bostock; namely, a sensation of heat and fulness in the eyes, accompanied with redness and discharge of tears. These sensations go on increasing; and a fulness in the

head is experienced, with irritation of the nose and violent sneezing. To the sneezings are added a farther sensation of tightness of the chest, and difficulty of breathing; with a general irritation of the fauces and trachea. These symptoms are worse by paroxysms, and are often traced to changes of the weather and other causes; they do not, however, as in the instance of Mrs. H., go on to regular asthma. The complaint wears itself out toward the middle of July. This lady decidedly considers the cause of her complaint to be an emanation from the flowers of grass. It begins when grass comes into flower. There is a perceptible increase, or paroxysm, when she is exposed to these effluvia; and when the flowering time is over, she can go into a hay-field with impunity; which she could not previously do.

"The father of this lady is immediately seized with violent and continual sneezing, and inflammation of the nose and eyes, when he goes into or approaches a hay-field; but the symptoms go off when he is removed from the smell of the hay. He therefore carefully avoids the exciting cause, and escapes the disease. Three of the sons of Mrs. A. are also subject to this disease; and their symptoms are similar to hers, though less severe. One of these young gentlemen is now at Geneva; and had the complaint there this summer. A younger son (a boy about ten years old) is made asthmatic by the smell of Guinea-pigs."

You see, therefore, what the character of this complaint is;—that it is not merely spasmodic asthma, but excessive irritation of the mucous membrane of the eyes, nose, and the whole of the air-passages. It is a combination of catarrh and asthma.

I have no doubt whatever, that it arises from vegetable matter diffused in the atmosphere; that it is derived from the flowers of some plants; and that, in a great number of instances, it comes from grass. The lady to whom I have referred, and who informed me that she had had the disease so many years, told me that she was once away from home at an inn, where she conceived there was no danger whatever of being affected by the flowers of grass; but she was seized with a violent difficulty of breathing, and great irritation; and on looking out of a window, she found that there had just been brought into the inn-yard a cart-load of hay. She told me also, as another proof that the affection arose from this source, that her children once came into the room after having been playing with hay; and instantly her breath became affected. She also informed me, as a still farther corroboration, that if she handled fresh hay, her hands instantly became affected; shewing the morbid sensibility of her skin to the flowers of grass. Skin, you will remember, is analogous to mucous membrane. I have, however, a letter from this lady, in which she details the whole particulars of her case; and as it contains many interesting facts, I will read it:—"I was first affected with the disease," she observes, "in 1798; and from that period have annually suffered from it more or less. It usually attacks me about the latter end of May, and continues till the

middle of July, and sometimes till the close of that month; but this has occurred when the weather has been unfavourable, and the hay-harvest has been particularly late. I have never suffered after the hay has been got in.

"The first symptoms are irritation of the nose, violent sneezing, and all the usual attendants of a cold in the head. These are succeeded by spasms affecting the breath; which have often been so severe as to threaten my life, and are the most distressing part of the disease. Violent irritation of the eyes, throat, and the whole interior of the head, has been experienced when passing by fields where hay was making; which symptoms have all disappeared very soon after entering a room, and excluding as much as possible the external air.

"I believe the complaint with me to arise principally, if not entirely, from the farina of the grass. It has commenced sooner or later according to the season; and my first symptom has generally occurred when walking in the fields, and not till the grass is *in flower;* and from that time till the hay-harvest, is completely finished, I suffer whenever I am exposed to the air.

"I have tried the sea-air, and also London. The former I found most beneficial; although the latter was productive of considerable relief. Ramsgate and Harwich have suited me the best; which I attribute to the small quantity of grass grown in the neighbourhood; and to the bracing air, which has invigorated my general health. At all places by the sea, I have been immediately sensible when a land-wind blew, and felt instant relief when it came off the sea again; and two years ago, when this was the case at Harwich, during nearly the whole of the six weeks I spent there, I suffered scarcely any inconvenience. I walked out daily; went frequently on the water; and bathed regularly in the sea. During other seasons, I have been obliged to shut myself up entirely in the house; and not to allow a window to be opened, or to permit any one who had been into the air to come near me.

"My children, in approaching me after being in the hay-field, have often brought on a fit of sneezing, or a spasm of my breath; and this was once effected by their sitting down by me to tea, after playing in the barn where the new made hay was stacked, some time after the season was over. Once, at Harwich, when walking on the shore, I became suddenly affected; which occasioned some surprise, as no grass was apparently near; but, on the following day, I found that hay had been making on the top of the cliff, at the time I was walking under it.

"At Cromer, two years since, I was suddenly seized with shortness of breath, &c., after the complaint had subsided, and all the hay in the immediate neighbourhood finished; and upon going into my bed-room, I saw an immense stack making, in a yard near the house, with hay which had been brought there from a field five miles distant. In 1817, I was perfectly well till the grass was cut in our own fields; when my breath became so seriously affected, that it was thought necessary to remove me directly from the infected

air; and I was with difficulty taken from my bed to the carriage which was to convey me to Harwich, twenty miles distant; but when I arrived there, I was so much relieved by the change of atmosphere, that I walked with ease up two pair of stairs to bed; and had no return of illness that season.

"In packing baskets with hay, I have frequently had fits of sneezing, and tingling in my hands; and have every reason to believe that the seeds of the grass are poisonous to me. I have long ceased to have medical advice for the complaint; and by avoiding the exciting cause as much as possible, and using palliatives on the first attack, I have of late years suffered less than formerly. I always confine myself entirely, while the hay is making near me; and at other times I walk with salts, or some other pungent scent, in my hand. When I feel the irritation commencing, if I snuff it up, I can frequently keep off a fit of sneezing. My breath is relieved by sedatives; and smoking stramonium will always check the asthmatic spasms.

"My uncle, Mr. * * * *, of * * * *, and his son, were affected about the same time as myself;—the former with sneezing only, and the latter with all the symptoms. They both attribute it to the grass; and the son is obliged to come to London when his hay is making. A cold season suits me best, and the symptoms are aggravated by a close air; which may perhaps arise from the obnoxious particles hanging in the air, and being thus inhaled in larger quantities.

"The disease has certainly increased rapidly during the last twelve years; and has attacked persons of all ages. Most of those with whom I have conversed on the subject, believe it to be occasioned by the farina of the grass, or something poisonous to them, which floats in the air at that time, and which comes when the grass begins to flower, and departs when the hay harvest is over. I have no disposition to asthma at any other period of the year; and scarcely ever have a cold, or occasion to use a pocket-handkerchief. My habit is relaxed; and I am always benefitted by a cold bracing atmosphere. I have occasionally found my breath considerably relieved by going out of the air, into a crowded assembly; and from our own house in the country, to one in a narrow street in the middle of a town."

It is conceived, by some persons, that it is the sweet-scented grass which is productive of this affection;—at least, many persons have decidedly been affected when they have gone near sweet-scented grass in flower; and some ascribe the greater prevalence of the disease now than formerly, and consequently the notice of its occurrence, to the introduction of some new species of grass into this country.

Seeing that the emanations from the grass (the pollen, in all probability) is a compound, though I do not know its constitution, I fancied that it might be destroyed by the chlorides;—in the same way as some animal matter. I therefore requested a gentleman

who had the disease to try it; and he did so with the most perfect success.

This was the first case that I ever saw of the disease. A gentleman came to consult me upon it, about three years before I saw the lady. I told him, at once, that I knew nothing of the affection; and I sent him away as he came;—so that neither he nor I got anything by the interview. I told him that I had heard of such a thing as hay-fever, existing among distinguished lords and ladies, but I could not conceive what it meant, and therefore I could give him no advice. I casually met him, after I had read Dr. Bostock's paper;—and I requested him, as a favour to myself, to try the effect of a solution of chloride of lime or of soda. I directed him to place it in saucers about the bedroom; to have rags dipped in it and hung upon the backs of chairs; to wash his hands and face with it night and morning; and to carry a small bottle of it with him; and to smell it repeatedly in the course of the day. He complied with my request; and the result was highly satisfactory. The irritation of the ears, (for in his case *they* also were affected), the tingling and the smarting of the eyes and nose all ceased; and by using this precaution, he got through the summer exceedingly well. Whether the chloride acted by destroying the emanations, or by lessening the irritability of the mucous membrane, or of the skin, I do not know. The chlorides, if well diluted, diminish the morbid irritability of the surface; and therefore they might, in this case, have acted in that way. The treatment, however, was perfectly successful. The lady said that she had used every thing, but in vain; and I could not prevail upon her to try the remedy.

In consequence of making this known in the clinical lucture, to which I before referred, it is said by Mr. Poyser, that one of the sons of the lady affected with the disease, employed the chloride of soda. Mr. Poyser says,—"The chloride of soda has been of great use to this gentleman; removing, at once, the sensibility of the nostrils and eyes; and thus allaying the sneezing, cough, and inflamed and watery state of the eyes." But he adds, "Mrs. P. A. has not experienced any perceptible advantage from the chloride." Three out of four, however, did. When persons are also subject to spasmodic asthma, I should recommend them to breathe through water impregnated with the chloride; and a larger quantity ought then to be employed about the bed-rooms, than when they have hay-fever alone.

Some persons are peculiarly affected by other substances. Many persons have a peculiar susceptibility of ipecacuanha;—this is by no means uncommon. If ipecacuanha be powdering in a chemist's house, some persons will be seized with a violent paroxysm on entering it. I have known an instance or two of this description. I heard a physician say that there was a case related on which he could depend,—though I would not myself vouch for its accuracy,—of a person who had such a susceptibility of ipecacuanha, that on entering a room and being seized with asthma, he declared that there was

ipecacuanha about. It was at first denied; but at last some one recollected that there was a box of ipecacuanha-lozenges in a table-drawer. That was going very far; but it is a fact that some persons are seized with asthma, if ipecacuanha be near them. As I shall not have another opportunity of doing it, I may mention here, that other persons are peculiarly susceptible of various things. Some are affected by the emanations of an animal. You will remember that Shakspeare alludes to some females who cannot bear a sucking-pig; and some cannot bear a cat;—they are made miserable if a cat be near them. It does not produce asthma; but the emanation from a cat has such an effect upon them, that they are quite wretched. Mr. Poyser states, that the son of a lady who had hay-asthma, is made asthmatic by the smell of Guinea-pigs. When he is in a room where they are, he is immediately seized with difficulty of breathing. I have a note from a gentleman, in which he informs me that a nobleman with whom he is acquainted, is affected by sneezing and asthmatic affections, by coming in contact with a hare, or rather the *fur* of a hare; and remains ill for several days afterwards. He experiences great suffering, whether the hare be dead or alive.

I have another letter on the subject of hay-asthma,—from Brighton; but I will only read a portion of it. Dr. King says,—"I know a member of parliament, who has come to Brighton every summer for some years, in order to avoid the disease at home. A lady also comes from Clapham, for the same purpose; and with the same good effect. The lady, however, whom I saw with it, told me that she knew a cobbler's wife who had it; and that several persons of the lower orders, to her knowledge, had the disease." Dr. King, in his letter, goes on to say,—"Last year I met, at Lewes, a farmer's wife, subject to the same complaint; and obliged, every hay-season, to take refuge in a town. She bears up against it as long as possible; and shuts herself close up in her room, till a sense of suffocation comes on, as in common asthma; when she is obliged to throw open the window, by which she lets in a fresh dose of poison, and has the same routine to go over again, till she is obliged to fly. As soon as she quits the regions of hay, she experiences immediate relief. I dined lately in company with a lady, who went into convulsions as soon as her plate was put before her, owing to its containing some peas which had been boiled or dressed with mint. We carried her out of the room; and she did not feel quite well all the evening. Her daughter, who sat next her, was not similarly affected."

These are circumstances worth knowing; because, if you were not acquainted with them, you might ascribe cases of this description to whim and fancy. It would be very odd if they were confined to the higher orders only. It is a thing exceedingly improbable. The fact is, the lower orders consider the hay-fever as merely a common cold; and they do not apply for medical advice (being unable to pay for it) unless they are tolerably ill. They do not think of applying to a public charity, because they are seized with a violent

sneezing; or if they do, it is a solitary case, and is treated as asthma;—the nature and causes of the disease not being known.

Laennec has no idea of it; but he mentions one or two curious circumstances. He says that the following fact was communicated to him by one of his colleagues, as affording a curious instance of nervous affection, in a man not subject to asthma. "A man, forty years of age, slightly hypochondriacal, but otherwise in good health, wished to go on horseback to pay a visit some leagues distant from his house. As soon as he left the town where he resided, which is situated in an extensive plain, he felt an immediate oppression on the chest, from the impression of the country air. He took no notice of this at first; but the dyspnœa having greatly increased, and being now attended by a sense of faintness, he determined to return. He had scarcely turned his horse, when he found himself better; and in a few minutes he recovered both his breath and his strength. Not suspecting any relation between this momentary uneasiness and his journey, he once more attempted to advance; and was again soon attacked with the dyspnœa and faintness. On turning towards the town, these passed off. After having made repeated attempts to proceed, and always with the same result, he finally returned; and in just as good health as when he set out. I have lately met," continues Laennec, "with a case very analogous to the one just related; only that in this the symptoms were more severe, and the cause was different. Count H., a man of robust constitution, and although now eighty-two years of age, still possessed of a degree of vigour unusual even at the age of sixty, has been subject from his infancy to attacks of asthma; and is habitually somewhat short-breathed. Since his fiftieth year, he has had a slight cough; and in the morning a pituitous expectoration, intermixed occasionally with some yellow sputa. The asthmatic attacks have always been unfrequent with him; but they have invariably come on if any person has inadvertently shut his bed-room door, or if his night-lamp has by any chance gone out. As soon as either of these accidents occur, he immediately awakes with a feeling of oppressive suffocation; and after a few minutes he becomes insensible. On the occasions alluded to, the attack is got rid of by opening the doors and windows, lighting the candles, and carrying the patient into the open air." I presume it is the smell of the lamp which causes it; and perhaps the emanations from his own body,—the smell of his own perspiration when he is shut up.

You see, therefore, that in many instances of asthma, there is a violent external exciting cause. At least, there is unquestionably an external exciting cause; but it varies much in its power in different individuals. A predisposing cause, in many persons, is bronchitis; and, in others, various organic diseases of the chest. In some persons, without any external excitement at all,—without moisture, or coldness, or confinement from the air,—there will be an asthmatic paroxysm;—simply from an irritable state of the mucous mem-

brane, and from organic disease. I have already alluded to one case where, from the mechanical pressure of a small aneurism, a paroxysm came on,—independently of all external circumstances.

The treatment of this disease may be divided into two parts;—one part relating to the treatment during the fit; and the other to the way of preventing its recurrence. In the fit, if the patient be plethoric, it may be well to bleed; but in general this is not necessary. One of the best things you can do is to give the patient a full dose of opium. Frequently a very large quantity is borne, on account of the exceedingly deranged state of the system. Forty, fifty, or sixty drops of laudanum, are frequently not more than sufficient to relieve the fit. I once had an extraordinary case of this kind; where such a dose was given without any effect. A drachm was then given, but still without any effect; and so also were two drachms. Seeing this to be the case, the medical gentleman who was attending the patient, grew out of patience, and gave half an ounce; which was merely sufficient to get rid of the paroxysm. When the next paroxysm came on, however, that dose failed entirely; and six drachms were given, and produced tolerable relief; but not enough; and at last many drachms were given for a dose, with no more effect than of putting a stop to the paroxysm. These are states of the system, in which ordinary doses are of no use; but, in general, from forty to sixty drops are borne very well; and are sufficient. It is useful to combine the laudanum, in these cases, with a dose of æther; and if you mix them up with ammonia, or with musk, or assafœtida, you will generally add to their good effect. But opium generally answers the purpose. Should the patient be plethoric, however, and have chronic bronchitis and fullness of the chest, it would be very wrong to give a large dose of this description, lest it should produce apoplexy; and it would be right to take away a certain quantity of blood. Some patients are relieved by cupping, and some by *dry*-cupping.

When the paroxysm is over, it would be useful to endeavour to prevent its return, by giving a dose of some preparation of opium, together with æther; but in a smaller quantity than in the former case. Some persons have told me, that they have seen very great relief from cantharides, in this complaint and in hooping-cough; but whether they really are beneficial I cannot tell. The advantage, however, of opium, æther, musk, and assafœtida, is unquestionable. Some have found very great relief from smoking stramonium. I have seen many persons, who have derived benefit from smoking the leaves and stalks of stramonium, chopped up together. Some have found the smoke of *tobacco* serviceable; but far fewer than those who have derived benefit from stramonium. You will find it of very great use to make patients drink strong coffee, without milk and sugar. It is an old remedy, but a very good one. There ought to be no grounds in it, because they may disturb the stomach; and that organ, in this complaint, is generally much disposed to indigestion. If it should so happen that a paroxysm comes on from a

hearty meal, it will be found very serviceable to give a good emetic, either of mustard or sulphate of zinc;—something which will not nauseate the patient long, but will empty the stomach as quickly as possible.

I am supposing, all along, that the patient is free from chronic bronchitis;—has simple pure asthma. If, however, there be any chronic bronchitis present, you will find that squills, digitalis, colchicum, and ipecacuanha, will all be useful;—some by increasing the flow of urine; and others by increasing the secretion from the air-passages. Some have found relief from opium and prussic acid, and others from hyoscyamus and conium; but if you want an immediate effect, I think there is nothing equal to opium and stramonium. There is no rule for these things; for some persons are relieved by *one* article, and some by another. It is right to consider this as a spasmodic disease, which may be removed; and if it can, it should. It may arise from a full stomach; and then an emetic is the best remedy. It may arise from grass; and then the chlorides scattered about the room, I conceive, would be the best thing. But if you cannot remove the exciting cause immediately, or not at all, then you will find that the best mode will be venesection and opium.

With regard to the *prevention* of the disease, besides giving the things just mentioned, and besides removing the patient from the exciting cause if it be known, it is of great use to pay attention to the stomach and bowels. Every body knows, that if the abdomen be distended, the diaphragm cannot descend freely, and we can scarcely breathe; and asthmatic people suffer, in these circumstances, to a very great degree. Dr. Wilson Philip has spoken highly of galvanism in this complaint, and no doubt it does good; but you cannot expect it to be universally efficacious, when you consider that asthma is often united with organic affections, and with chronic bronchitis. When persons are very weak, you find that tonics are necessary,—particularly iron. Dr. Bree used to exhibit the carbonate of iron particularly in the disease;* but I have not found it useful, except as a *tonic*. In regard to the inhalation of chlorine, it may be had recourse to in every form of asthma. You may impregnate water with it, and make the patient breathe through it, and in that way inhale it. If you think proper, you may adopt the same means with regard to prussic acid and conium. Some have found benefit from tar; and others from tanners' liquid, put in one corner of the room. Another way of giving persons the advantage of these things, is to impregnate water with them; and to make patients breathe through the water, three or four times a day.

HOOPING-COUGH.

The next disease of which I will speak, and which is very much allied to the last in some respects, is hooping-cough. The disease is so called, from the peculiar noise attendant upon the cough.

* "Practical Enquiry on Disordered Respiration; distinguishing Convulsive Asthma, its Specific Causes, &c. By Robert Bree, M.D."

Sometimes it is called *chin-cough*, because it particularly attacks children; and "*chin*" (I suppose a corruption for *kind*) is the German for "*child*." In Latin it is called *tussis*,—"cough;" or to shew its intensity, *pertussis*,—"*much* cough."

This disease is easily known when it has been once seen. There are occasional fits of violent coughing, with short expirations,—a volley of them; and then one deep, long, hooping, crowing inspiration; and these are many times repeated. A quantity of viscid phlegm is spit up; and very often the child vomits. The cough is exceedingly severe; every muscle is put into action; the face grows red; the eyes "run;" and then the child, although unable to stand, and apparently about to be strangled, runs about and plays, an instant afterwards, as if nothing were the matter with him. This is very commonly seen; and the cough will come on day after day. At first, there is generally some catarrh and bronchitis with it; and these are of various intensity, as is also the cough. Sometimes the bronchitis is very considerable; so that the child has a constant difficulty of breathing, a constantly quick pulse, and constant heat; and is exceedingly ill. The disease, although to a great degree spasmodic, and sometimes almost entirely so, is occasionally, on the other hand, inflammatory in a high degree. When it has been inflammatory, and the child recovers, the spasmodic cough will frequently continue, even for many months after the inflammatory state has subsided.

The first notice of the disease, is generally occasioned by the extreme violence of the cough, or by a hoop. Very frequently it is not noticed at all, till the child hoops; and then there is no doubt of the nature of the disease. In fact, you are never justified in saying that the disease exists, till the child hoops. If the disease prevails in the neighbourhood, and the child coughs more violently than usual, in all probability, it will "turn" (as people say) to the hooping-cough. But if the disease be not fully formed, one cannot say with certainty that it is the disease, unless the child hoops. If the bronchitis be violent, or if it continue for a great length of time, though not violently, the child may die. As a mere spasmodic affection, hooping-cough does not generally destroy life. In the greater number of cases where children die, there is a violent, or extensive bronchitis, and a violent or extensive inflammation of the substance of the lungs.

On opening children who have died of this disease, you occasionally find very little the matter in the lungs. The child may have died from something else; for the disease has a great tendency to produce hydrocephalus,—to produce convulsions, and various affections of the head;—such affections as we see in children. It is one of the great calamities attending the disease, that the effects of it are so fatal. There is such continued difficulty of breathing, and such violent cough, that the vessels of the head are over-distended; and the consequence is such congestion and irritation of the head, that hydrocephalus continually occurs. I know that violent coughing

will overstrain the vessels of the head, and produce great mischief; for I saw, not long ago, an infant that had never been well from the moment it had coughed violently. It was so strained, that the parents from time to time, fancied it would die. From the instant of the coughing, the head drooped, and convulsions came on; of which it ultimately died; although, till it was seized with this violent cough, it was comparatively well,—having nothing the matter with the head; and having only a common cough at first;—such as other children in the family had. Thus you see children dying from hooping-cough, or from the *effects* of it rather than from the disease itself; and yet, after death, you can discover very little wrong in the lungs. But frequently, indeed *generally*, on examining the lungs, you find a large quantity of mucus in the bronchia. You find the mucous membrane red, thick, soft, and pulpy, and increased in thickness; so that there is clearly bronchitis. You also frequently find the lungs very solid. The air-cells have become inflamed; and the lungs are very much hepatized. I have opened children who have died from hooping-cough; and nearly the whole of the lungs have been like liver. They did not collapse; and on pressing them, you could scarcely diminish their bulk in the least. When these circumstances take place, on listening to the chest you hear the common signs of bronchitis;—you hear the silvery rattle which occurs in the breathing of adults; and you hear the respiratory murmur excessively loud and rough throughout the chest.

The disease may destroy a child in two or three weeks, or it may not destroy it for many weeks; but after the disease has lasted six or eight weeks, it generally gives way. It seldom continues longer. Children, however, from the very slightest cold, are apt to hoop again. Some will hoop occasionally during the greater part of a twelvemonth; and some, when they have once had the disease, if they catch a severe cold, at a more distant period even than that, will be observed to hoop. It affects by far the most frequently *children*; but it also affects *adults*. I heard that the late Archbishop of Canterbury had it, a short time before he died. It is frequently an epidemic disease. It does not, in general, occur more than once; except in a mere spasmodic form;—when the parts are thrown into such a condition as to produce hooping, although the real disease does not return.

Hooping-cough is supposed, by some, to depend on a specific contagion. Some deny this; but others assert it. I was always taught that this was its source, and I never thought of doubting it; but others have done so, and I suppose they have a reason for it. Any irritation whatever will provoke a paroxysm, when a patient has the disease. If a child be put in a passion, or you move it about quickly, or give it any thing stimulating, then a paroxysm will take place. There may be various exciting causes of a *paroxysm*; although the peculiar exciting cause of the *disease*, I presume, is only one;—either a specific contagion, or something peculiar.

When a child vomits, it is generally considered a good sign. If

there be no vomiting with the cough, it is observed by those who have most experience, that the child gets worse. Dr. Gregory knew a lady, who never hooped in the disease; and therefore it was hardly "*hooping*-cough;" but she always fainted. The disease prevailed in the family, and she had as violent a cough as the rest; but at the time she ought to have *hooped*, she *fainted*.

The danger is in proportion to the other symptoms;—that is to say, the symptoms of affection of the head, and of bronchitis and peripneumonia. The younger the child the greater the danger. It is a very dangerous disease when it occurs in infants. Those who suppose that the disease arises from contagion, consider that it remains latent, from a few days to a few weeks; and they suppose that the disease itself, when it occurs in an individual, is not capable of communicating contagion beyond a month or six weeks;—just as is the case with other contagious diseases. Gonorrhœa, for example, after a certain lapse of time, although nobody will venture to fix the period, is not contagious.

The treatment of hooping-cough is two-fold;—accordingly as it respects the *inflammatory* or the *spasmodic* condition of the parts. The most important thing, by far, is to remedy the inflammatory state;—the bronchitis or peripneumonia. If it be found that there is a constant oppression of the breathing, with spasmodic attacks of increased difficulty, and occasionally a violent cough, and that there is an accelerated pulse, and pyrexia; together with sonorous, sibilous, and crepitous rattle,—it will be evident that there is inflammation of the bronchia, or the substance of the lungs;—the air-tubes, or the air-cells, or both. Of course that inflammation must be remedied in the usual way. You might give all the anti-spasmodics, all the narcotics, and all the other medicines that are supposed to have a direct influence over the spasm, and yet do no good. In fact, you would make the patient worse; and if nature were not to get the better of you, and cure the individual, there is every probability that great mischief would be done. It is therefore highly important to ascertain the existence of inflammation; and to remedy it, if possible, in the usual way;—by taking blood from the neighbourhood of the chest; occasionally by bleeding in the arm, if the patient be old enough; but particularly by *local* bleeding, and the exhibition of mercury, and of emetics. In the greater number of cases, the inflammation is such as will yield to the application of a few leeches, and the exhibition of emetics; but it is of great use, at the same time, to clear out the bowels by calomel, provided the inflammation is severe, and to give it steadily in small and repeated doses. The inflammation is frequently not so severe, but that an emetic every day, or night and morning, will be found sufficient for all the purposes of remedying the bronchitis; still I would not trust to it in severe cases. In this, as in most diseases of children, the warm-bath is of essential service. It is thought by some, that the friction of tartar-emetic ointment over the chest, is more useful than the application

of blisters. I rather feel disposed to think that is the case; and that blisters are not of very great utility in the affection.

You will find it of very great importance, not to allow children to overload the stomach; for the cough is generally much more troublesome after meals than before. When there is any inflammation, the food should, of course, be exceedingly light;—affording scarcely any nourishment; and the patient should not be allowed to distend the stomach with liquids. During the whole period of the disease, even when the inflammation is gone, you will find it of use to let the food which is given be very compendious;—not to be bulky. It is also of great use, in this disease, to prevent children from moving about a great deal; for running will frequently excite the cough; and it is also of great use to keep the child quiet mentally; for a fit of passion will bring on a violent cough. The bronchitis will sometimes continue for a great length of time. The breathing will be difficult for some weeks; there will be more or less feverishness; and the child will waste away; but by the steady employment of antiphlogistic regimen, with a moderately open state of the bowels, many cases will do exceedingly well;—notwithstanding the bronchitis may continue, though not in a violent degree, for some time.

Next to the employment of emetics, you will find narcotics of very considerable use. Emetics will not cure the disease; because there is, in many cases, violent inflammation, and you must treat that in the usual way; but there is hardly a case of hooping-cough, that will not be much mitigated by the continued use of emetics. In the first instance, a large number of cases may be trusted to them, and to the administration of narcotics. Prussic acid is very useful in this complaint; not in subduing inflammation, but in subduing the tendency to cough. You may give it to the youngest child; but of course it should be in a small quantity. If the child be young, you may put one minim to one or two ounces of almond-emulsion; and one tea-spoonful of this mixture will sometimes be found as much as is proper. This is one of the most convenient modes of exhibiting it; and from the sixteenth to the fourth of a minim may be given, three or four times a day. After the disease has lasted some time, you will find opium more or less useful, given in a small quantity. "Dover's powder" is one of the best forms. The extract of conium and hyoscyamus may be given in small doses, rubbed up in mixtures or emulsions; but I think prussic acid is one of the best things. It will not cure the disease; it has no specific power over it, any more than any other narcotic; but it does remedy spasmodic irritation of the air passages, exceedingly well; and very often better than other narcotics. After a certain time has elapsed, and no bronchitis exists, or so slight a degree of it that it requires no inflammatory treatment,—when there is debility and irritation of the air-passages, rather than any thing else, tonics may be given. Various *metalic* tonics have frequently been employed. I do not know that any one is so good as iron; it seems to me to be the best we have. The

sulphate is a form in which the medicine may be given very conveniently to children, dissolved in various mixtures; and as they are fond of sweet things, the carbonate,* mixed with treacle, may be very easily given them. I am not aware that it exerts a particular power over the cough; but, when the disease has existed some time, you will find such remedies very useful.

Some persons place a great reliance upon friction, with some external application; and narcotics are frequently applied in this way. I believe that a very good remedy is a quack medicine, called "Roche's Embrocation." Any stimulant not sufficient to abrade the cuticle, and produce inflammation, if it have united with it a quantity of opium, will be found exceedingly serviceable. Friction along the spine is particularly recommended. After a time, there can be no doubt of the use of the cold shower-bath; but one of the best things is change of air. Every old woman says so; and I believe she is perfectly right. I have known (as every one must) many cases, where the cough continued in spite of all the medicines that could be given, and all the physicians that could prescribe them, till the residence was changed; and then the cough speedily diminished. This will not do good at the beginning. It is only when the disease has existed some time, and is disposed to cease, that you find a change of air will cause it to disappear, better than any thing else. The inhalation of tar-fumes has been recommended; but as these are acrid, it would be a wrong practice during the inflammatory stage; though when the disease becomes merely spasmodic, they may be of use. The mode of employing the tar, is to put it in a pipkin in the room, and to let the fumes ascend so as to impregnate the air. In doing this, great care should be taken that the fumes are not too strong; or they will *cause* irritation, instead of *subduing* it; but, with proper precautions, it is a remedy that is of great use. I dare say chlorine, used about the room in the same way, would be beneficial; but great care is required not to use these things to the degree of producing irritation.

Hooping-cough is a very troublesome disease to treat. You may save life by subduing inflammation; but with regard to removing the complaint, you may find yourself very much baffled. Much good, however, may be done, with respect to the spasmodic part of the affection, by good management;—by giving light food, and a very moderate exhibition of narcotics. Of all these prussic acid is the best; for although its exhibition is not very satisfactory, I am persuaded it is *more* satisfactory than that of any other narcotic.

SPASMODIC COUGH.

There is a cough which you every now and then see; and which is not the "*hooping*-cough;" but what may be termed "*spasmodic* cough." This affection is, perhaps, united with a degree of inflammation; or perhaps not; but if it be united with inflammation, it is out of all proportion to it. I believe this is what is meant by "spasmodic

* The *Sesquioxide*.

cough." I have seen a few instances of a most violent cough, tearing persons in pieces, like hooping-cough; but still it was *not* hooping-cough; and it occurred in adults.

In this disease, I know that iron is by far the best remedy. I have cured every case which I have seen of it, by the exhibition of the carbonate of iron. In many of these cases there is no indication for bleeding; although, if the patient be robust, it may be expedient to bleed in the first instance; but I have always treated such cases with the carbonate of iron, and with great success. In every case where the cough is out of proportion to the inflammation, or where there is an organic disease (even consumption), you will find iron to be the best remedy. Many cases attended by cough and expectoration, which have been mistaken for phthisis, have given way to this remedy.

NERVOUS COUGH.

I have now and then seen a very extraordinary cough in young women. All very extraordinary cases, independent of organic disease, are to be seen in young women. Cases are continually seen in young women, of so extraordinary a nature, that you would not believe in their accuracy, if you merely read them in books. I recollect very well seeing a young lady, single,—for these cases almost all occur in single ladies,—who complained, that every time she inspired she coughed, night and day. She breathed slowly; but when the time came for expiration, she coughed. Nothing was expectorated; and on listening to the chest, there was nothing preternatural to be heard. She had coughed in that way for months. At first the cough was quiet when she slept; but when I saw her, it would not allow her to sleep. I did her no good, and what became of her I did not hear. It was the most extraordinary case I ever saw. I have no doubt it was a nervous cough;—that it did not depend upon any inflammatory or organic disease; and that it would cease entirely of itself, in the most sudden manner. Occasionally females will have a *barking* cough. Sometimes they will have a violent spasmodic cough, such as I have now described, only modified in various ways; so that they will make all sorts of strange noises (such as shrieking);—unattended by organic disease, and apparently arising from a mere nervous derangement of the parts. The exact nature of these affections, I have not been able to ascertain.

PHTHISIS PULMONALIS.

The first *organic* disease of the lungs I shall mention, is one in which unfortunately we can do little or no good; and which causes more destruction in this country, than any other affection whatever. It is "consumption." I shall commence by describing, not the symptoms, but the changes of structure which take place in the lung itself.

This disease is called, in *common* language, *consumption*, or *pulmonary consumption*; and in *medical* language, *phthisis pulmonalis*,

or simply *phthisis*;—"*pulmonalis*" being understood. The word "*phthisis*" is derived from *φθιω*, *to consume*. This disease is apparently of a scrofulous nature. The substance which is deposited is precisely that which takes place in parts, when we say they labour under scrofula. Some have made varieties in phthisis, as being tubercular or not; but by "*phthisis*" is now meant, not an *ulceration* of the lung, but a *scrofulous disease* of the lung; which *may* produce ulceration; and which *will* produce ulceration, if it continue long enough. But ulceration not connected with this disease, is not called "consumption." An abscess may be formed from common inflammation, rare as it is; but that is not called "phthisis;"—it would be called simply an abscess in the lungs, or a *vomica*. By "*phthisis*" is meant a deposition of a scrofulous substance in the lung; and all the organic changes to which its presence, or the state which produces its presence, gives rise.

The deposition, in this disease, takes place in minute granules; which are greyish, semi-transparent, and pretty firm; lying close to each other, over a certain space in the substance of the lungs. Although at first they lie distinct from each other, yet they are close. They increase in size; and they likewise increase in number; and as they increase in this twofold manner, they of course approximate. The space between them diminishes; till they coalesce, and form a mass. When they increase in size and number, they possess less semi-transparency;—they become opaque and yellow, This change is first observed either at the centre, or on some part of the surface; and from the point at which it commences it gradually pervades the whole "tubercle," as it is called. When they are so few that they increase considerably, each tubercle seldom exceeds the size of an almond; but the masses produced by their aggregation may be very large. I have often seen the whole of one lobe of the lung, and I once saw the whole of one lung, converted into a solid tubercular mass. It is right to mention, however, that Laennec conceives that the tubercular deposition in such a case as this,—where the whole lung, or the whole of a lobe has become a tubercular mass,—has taken place in a diffused manner; that there has been a formation of distinct separate tubercles; but that the substance was diffused in the texture of the lung; and he calls this mode of deposition *tubercular infiltration*. Whether he is right or not, I do not pretend to say.

The shape of the tubercles is round, and rather oval; and this might incline us to suspect, that their situation is the air-cells. That they may be formed within the air-passages, is proved by the dissection of glandered horses, by Dupuytren and Andral. The bronchial tubes were filled with granules, mixed with pus and tubercular substance. Hence it is clear that these substances may be found in the air-passages; and Andral says, that he also found a tubercular mass in the minute twigs of the bronchia, where no ulceration existed; of course, therefore, the deposit may be formed in the air-cells. Many have said that this deposition takes place in the cel-

lular membrane of the lungs; but when we consider its situation, and consider that it is found in the minute bronchial twigs, and not leading to ulceration, it is probable that it is formed in the air-cells. Cruveilhier says that, after injecting mercury into the bronchia of a living animal, he found each globule of the metal surrounded by a concrete substance, formed of white granules, in various parts of the lungs. By injecting the mercury into the bronchia, it reached the air-cells; and he afterwards found granules, formed of tubercular substance, around the globules of mercury. Still it is to be remembered that a similar effect is produced in the cellular membrane, by injecting mercury into an artery; and that flakes, precisely similar to those in the lungs, are seen in the spleen, and in the cellular membrane of various parts. I will not, therefore, take upon myself to pronounce, whether tubercles exist in the one or the other. They may exist in both; but there are arguments on both sides.

After a longer or shorter time, the tubercular mass softens,—generally first in the centre; and the greater part becomes a fluid, resembling pus, in the midst of which are seen particles of the original solid and friable deposit. The membrane which is often found around the deposition, likewise secretes pus. Long after the tubercle is gone, the membrane which surrounds it continues to secrete pus; and the cavity enlarges by ulceration. The openings of the bronchia, which had been lost by the deposit surrounding them, blocking them up, compressing them, and causing them to ulcerate, —are seen opening into the cavity of the abscess, on all sides. Bands of pulmonary substance, and blood-vessels (shrunk and obliterated), are seen leading across the cavity, with tubercular deposit upon them; while a great number of blood-vessels are completely obliterated, and run flattened along the sides.

While some tubercles are advanced to this degree in one part, you will find others less advanced; and others, again, exceedingly minute (having been recently formed); both at a distance, and in the neighbourhood. You will see them in all states, in the same lung; but it is an established fact that, in by far the majority of instances, the greatest deviations from a healthy structure, exist at the superior part of the lungs; and the first tubercles are in the greater number of instances, deposited there. The reason why there is the greatest devastation at the upper part of the lung, is because the tubercles are first deposited there. In proportion to the duration of the tubercle, in general, is the change it has undergone; and if tubercles, therefore, be deposited in the upper part first, you will expect the third stage to be arrived at there, sooner than at the other parts. The reason of the tubercles being first deposited in the superior part, is not known; unless it be that the superior part of the chest is more exposed to the vicissitudes of temperature, than other parts. It certainly is a fact, with respect both to males and females, that the upper part of the lungs is less covered by dress than the lower. In ladies, and in women of all kinds, the neck is bare; and so is the upper part of the chest; and with regard to our-

selves, we have the breast more open than the lower parts; except when close square waistcoats are worn. But whether this will explain the circumstance I have mentioned, I will not pretend to say.

Some have made observations upon which lung is most affected with tubercles. Laennec says the *right*; but the majority of authors say the *left*. I have never made any observations on the matter; but as Laennec says the right, and the majority of authors say the left, I suppose that one side is as much subject to them as the other. The intervening portions of the lung, dividing the tubercular deposition, are frequently turgid with blood, and with a bloody serous fluid; and sometimes they are indurated, and of either a red, or a grey colour. The substance between the tubercles, is by no means always healthy; but is generally in the condition I have now stated. The bronchial membrane, if you slit it up, is frequently found red; and evidently smeared with a far greater quantity of mucus than in health. Thus there is evidently peripneumonia,—inflammation of the substance of the lungs, in many cases; and likewise bronchitis. There can be no doubt at all, I think, that by far the greater quantity of expectoration in phthisis, is derived from the bronchial membrane. A much larger quantity is furnished by it, I am convinced, than by the abscess; and the fluid secreted by the bronchial membrane is, as in common bronchitis, of all degrees of consistency, and of all degrees of quality.

Admirably as the morbid anatomy of phthisis has been investigated by the French, I am bound to do justice, on this subject, to one of our own countrymen; as I formerly did on the subject of enlargement of the air-cells, to Sir John Floyer, and Dr. Baillie,—a truly eminent physician of the last generation. In the "Medical Communications," you will find a very admirable paper on the Morbid Anatomy of Phthisis, by Dr. Stark; who was a very clever young man, and fell a victim to his ardour in investigating Morbid Anatomy. Dr. Stark, nearly fifty years ago, pointed out that phthisis was essentially a tubercular affection;—a fact which, though known to Hippocrates, had been passed over by almost every other ancient writer,—Greek, Roman, and Arabian; and by many of the moderns. Sydenham himself considered tubercles and abscess, as rather the *effect* of disease, than the actual disease itself. Boerhaave was not aware of the subject. Dr. Stark established that this was a tubercular disease; and, in his paper, traced the tubercles from their original minuteness and solidity, to their enlarged and softened state. He asserted that the chief seat of the affection, was the superior and posterior part of the lungs; and particularly, he says, the *left* lung;—agreeing therefore with a great number of writers, in opposition to Laennec. He stated that the bronchial ramifications were never obstructed or obliterated; but opened into the cavity;—just as I have shewn you in the drawings; but that the blood-vessels suddenly became constricted near the orifice; and even obstructed by a coagulum; so that an injection would not pass into the abscess from the large blood-vessels, or flow into the blood-

vessels around the abscess. He found that the injection rendered the parts quite hard; so that parts which appeared firm before, became soft by contrast. He also mentioned, that the parts unaffected by the tubercles, but immediately around them, are generally red and firm; so that he found, between the effects of the tubercles and this induration, that about one quarter only of the lungs, in extreme cases of phthisis, remained fit for duty. He ascertained that the tubercles generally have a capsule; and that adhesions of the costal and pulmonary pleura, generally exist where an abscess is within. You will find, when you open persons who have died of phthisis, and when the tubercles exist near the surface,—especially if they be softened down,—that there are adhesions on the outside of the surface of the lung, attaching it to the pleura. This is a provision of nature, to prevent the escape of the contents of the abscess into the cavity of the membrane. The care taken by nature to prevent sudden and speedy death, which would take place, were the blood-vessels not filled up by a coagulum, and flattened down upon the sides; and the equal care taken to prevent sudden death from inflammation of the pleura, occasioned by the escape of pus from any of these abscesses,—is certainly very striking; but both circumstances were pointed out long ago by Dr. Stark. The French are not aware of his existence; having, till of late, read so little of English literature.

The symptoms of phthisis vary, of course, according to the progression of these tubercles. This is the case both with the general symptoms, and with those which are to be learned by the ear. When the tubercles are only in a solid state, and are not united together into groups, we can learn nothing of their existence from the ear. We can only *presume* their existence, from the general state of the patient; and therefore cannot be *sure* that tubercles are formed. When they are sufficiently numerous to constitute groups, then, by striking that part of the chest, we hear a different sound from that which is audible, when nothing but air is present. You must also suppose, that when the part is softened again, and a cavity is produced, various other sounds will be heard. The part will sound different from what it would, were there no cavity at all, and no unnatural state of the parts; but where the air enters a healthy part, and leaves it again. From what I have said respecting the morbid anatomy, you will see clearly the reason for the different symptoms I shall have to detail. You will perceive that there must be more or less pain, cough, expectoration, and at last hectic; and you will see that the sounds in the chest must all perfectly correspond.

Having thus gone over the chief points of the morbid anatomy of phthisis, I shall now proceed to consider the general symptoms. This is for the most part a very slow and insidious affection. Long before any other symptom occurs, it is very common for the individual to be seized with hæmoptysis,—spitting of blood. This, as I mentioned when speaking of hæmoptysis (or hæmoptoe, as it is sometimes called), is usually from the bronchial membrane. The

blood is of course frothy, scarlet, and mixed with air. Occasionally it is in considerable quantities; but, for the most part, it is not to any great amount. The patient frequently has several returns of this, before any other particular symptom of phthisis presents itself. When phthisis occurs, there is then, for the most part, little or no more spitting of blood. Whether this has occurred previously or not, one of the first symptoms noticed is a short tickling cough;—such a cough as the patient denies even to exist. It is observed by his friends, while he himself for the most part complains little of it; or, if questioned on the subject, denies it altogether. The cough is short, tickling, and hacking, rather than very severe. With this cough there is generally spit up only a little mucus;—either at the same time, or soon after its commencement. It is very common to hear the patient complain of "a stitch in the side," generally low down; and one would think it was a little pleuritic affection; only that sometimes the stitch is undeniably felt beyond the chest in the parietes of the abdomen. I have known a very violent stitch, before any other symptoms of phthisis, low down in the abdominal muscles, out of the way of the chest; so that these pains, though they are occasionally pleuritic, are, I have no doubt, very frequently muscular. The cough is generally worse when the patient gets into bed; owing, I presume, to the coldness of the sheets; or when he rises in the morning;—from the coldness of the atmosphere of the room, compared with the warmth of the bed. There is felt a little shortness of breath on motion;—on any exertion, the patient finds that his breath is not so good as before; and he complains of languor. The flesh becomes soft; so that on taking hold of the arm of a patient, even at this time, you find it is flabby. The hair loses its strength; so that it cannot be kept in order as before. You observe this particularly in females. There appears to be a softness of the hair; which will not allow it to remain in the way in which it has been placed. There is also observed, about this time, a little feverishness. The pulse is found to be quicker than natural; and this comes on particularly after the least exertion. An exertion which before would quicken the pulse only perhaps ten beats, will now quicken it twenty or thirty, in a minute. On falling asleep, it is very common for patients to find that they sweat in some one part of the body;—in the calves of the legs, for instance, or upon the chest. The power of resisting external temperature is diminished; so that the patient complains of chilliness. The expectoration, although only mucus originally, is now streaked with a little blood. Perhaps the patient never had hæmoptysis, but the complaint has begun with the general symptoms I have mentioned, and the expectoration was mucus; but he tells you, on one of your visits, that what he has spit up was brown, or tinged with blood. That is another form, in which a discharge of blood takes place. Very frequently there is the hæmorrhage which I before mentioned; but more frequently, perhaps, there is no such thing as any decided

hæmoptysis; but the mucus, after a time, becomes a little streaked with blood.

There is now more cough, more dyspnœa, and more debility than before; and the patient begins to find that he lies more easily on one side than on the other. The patient finds his strength decrease; or, if he do not himself allow it, yet it is evident to others. He cannot make the same exertion as before; and it is also pretty evident that he loses flesh. Occasionally there is a sharp pain in the side, of a pleuritic character, so as to make it necessary to take away a little blood. There is clearly inflammation of the pleura. If the patient be a female, menstruation is almost sure to decline. The catamenial discharge loses its natural redness; becomes paler than it should be; and, as well as being thus impaired in its quality, becomes more scanty in its quantity; and, more frequently than not, ceases altogether. You will generally observe that, as these symptoms all proceed, the ends of the fingers become enlarged. The last joints of the fingers look broader than they did before. You will find that the whole appear tumid; and that the nail is particularly prominent. The eyes, too, become very clear. You observe a whiteness and transparency of them, which you did not see before;—the sclerotica looks of a more intense white than natural. The nails sometimes become very considerably incurvated. The whole nail is more convex than before; and, I believe, rather softer,—like the hair; and that part of the nail which is unattached to the cutis, is in many instances very much bent. The weakness of the hair is now such that, whether the patient be male or female, it falls off. The hair, which at first is only soft, and with difficulty kept in order, now generally becomes scanty. The expectoration, from being mere frothy mucus, now becomes a little green, or a little yellow, and more abundant; and instead of being long and stringy, like the expectoration of health, it becomes short between the fingers. Now and then the expectoration becomes fœtid, the strength very much declines, the sweating at night becomes very profuse, and the expectoration decidedly sinks in water; whereas before, either the whole of it, or the greater part, swam. Shreds are seen in it, whiter than the rest; like curdy lumps, or fragments; and, in some few instances, you observe earthy matter in it. The latter is, by no means, so frequent an occurrence as the former; but you see it now and then. The tongue will sometimes remain in a healthy condition; but in most instances it becomes loaded with mucus, and is foul and yellow, on the one hand; or becomes red at the edges and tip, on the other. Sometimes it is of an intense redness all over; so that it looks like a piece of beef.

There is now an increase in the pulse at two periods, at least, in the day;—that is, in the middle of the day and in the evening; but decidedly in the evening. There is a great exacerbation of it, together with heat of the body, after every meal. The pink sediment of hectic appears in the urine; and the pulse is constantly much quicker than it

should be; perhaps seldom below ninety, and frequently above a hundred. The mind and the appetite remain unimpaired. Persons labouring under this disease, will frequently eat heartily to the very last;—have a perfectly good digestion; and their mind is as alive and active as it ever was;—perhaps more so. Patients generally have hope. They will not believe they are in a dangerous state;—they do not think that their case is consumption. On the other hand, when people are not active, and think they are labouring under phthisis, in nine cases out of ten there is no danger whatever. A remarkable feature in the disease is this hope; even medical men, who have fallen victims to phthisis, have insisted, up to the day of their death, that they had not ulceration of the lungs; and that they should get well. This has been observed in intelligent men, as well as in those who were most stupid. It is not a matter of judgment, but of feeling; and hope in this disease, is exceedingly remarkable, quite characteristic of it, though it is by no means an *invariable* circumstance. Now and then you will see persons despond. They are quite aware of their situation, in this disease, when it is well established and confirmed; but in a much greater number of instances, there is the most lively hope. Patients will not believe that there is any danger.

In the greater number of cases, the intestines suffer very much. Perhaps, at the beginning, the intestines are a little dormant; but as the disease proceeds, and especially at the last, the intestines fall into a state of diarrhœa; and the purging very frequently alternates with the sweating. The purging is so severe, that you may say it melts down the patient; and it is called "*colliquative* purging;" and the sweating is so profuse, that it is called "*colliquative* sweating." The expectoration becomes more yellow and green than before; and it also becomes more abundant. The cough becomes more severe; the legs become œdematous; and the body wastes exceedingly. The hectic flush is seen, decidedly, upon the cheeks and palms of the hands; and the exhaustion is such, in some cases, that the patient frequently faints. He feels exceedingly languid. The patient is, at last, confined to his bed in all cases; but, in some instances, there is great tendency to syncope, and dyspnœa from debility; so that stimulants are required. Just before death, the brain is sometimes affected; so that there is frequently delirium, three or four days before death.

The progress of all these symptoms, is exceedingly various. Sometimes only a few weeks, but in other cases many years elapse, before the patient sinks under the affection. I am convinced that I have seen cases, where there were no symptoms of phthisis; and yet the patient has died from ulceration of the lungs, in the course of three months. I recollect one instance of this particularly. On account of some anomalous symptoms in the abdomen, the patient was continually examined by me. He was two or three miles from London; and on carefully examining his chest, I found that he was free from cough, and from all the symptoms of phthisis generally; as well as

from those symptoms which can only be learned from auscultation. He then began to expectorate; showed signs of phthisis; and died. On the autopsy we found ulceration. All this occurred in the course of two months. The public at large are aware of this state; and they give to such cases as these, the epithet "*galloping consumption.*" On the other hand, the disease will last, there can be no doubt, for very many years; that is to say, persons will have cough, and expectorate; yet it will not increase, but decline from time to time; and so they will go on, till at last they expectorate a great deal, and die in the usual way. Dr. Gregory, of Edinburgh, used to say that he knew a case, where a person was in a state of consumption, for fifty years; but it is impossible to say that the patient laboured under *phthisis* all the time; it might have been only *bronchitis.* But it is a fact, that there is very great variety as to the duration of the disease. It is generally quickest in those who have the finest skins, and are nearest the period of puberty; or who are not very much beyond that period. The disease is frequently suspended, on the other hand, by pregnancy, and by suckling; and now and then it has been suspended by other diseases, as by ague or insanity. These, however, are only occasional circumstances.

You will now be prepared to understand the symptoms which take place during the progress of this disease, and which are acquirable by the ear. At the first period of phthisis, there is nothing at all to be learned from the ear; at least, I believe not. It is from the general appearance of the patient, and from the general symptoms of which he complains, that you suspect that phthisis is present. At the onset, it is at most only a matter of *suspicion.* You cannot be *certain* of it. You will easily see that this must be the case, when you consider that, in the first instance, the tubercles which constitute this disease, are exceedingly small and exceedingly few;—leaving a large portion of pulmonary structure perfectly healthy. It is only when the tubercles increase to a certain size, and approximate, so as to form a mass, that you can expect any symptoms discernible by the ear. It is only when a considerable portion of the pulmonary structure is beset with tubercular deposit, that you can expect to discover any audible change. The parts in which the symptoms acquirable by the ear are to be noticed, in the first instance, are below the clavicles. This may be observed before the tubercles have softened; but when they become sufficiently large, and sufficiently numerous to occupy some space, on striking over the part where such deposit exists, you will not find the hollow sound of health, but a greater degree of dulness than there was before. In proportion to the size of the tubercular deposit, is the dulness of the sound; and you may save yourself a great deal of trouble, by beginning your examination at the clavicle, and immediately under it. Still, if you have any suspicion, and yet you find the parts below the clavicle sound well, you should examine other parts; because now and then the deposition, instead of taking place there, occurs in other situations. In the great majority of cases,

however,—I may say in nine cases out of ten,—the change takes place just below the superior portion of the lungs; and therefore you should commence your examinations there. Besides this dull sound on percussion, if you listen with the stethoscope, and make the patient speak, you will find the voice resound there in an unnatural manner. The solid substance of the tubercles, is so much better a medium of conveying sound, than the loose structure of the healthy lung, that the sound is louder where these tubercles exist than elsewhere. The voice will not come through the tube, as if the patient's mouth were at the other end of it, speaking to you; but you hear the sound echo; and you hear it louder than natural. You have no pectoriloquy; but you have what is called *bronchophony*;—the same sound that you hear in putting the stethoscope over the large bronchia. But it is to be remembered, that the voice naturally sounds louder under the clavicle than elsewhere, on account of the large tubes being there; and therefore you should not depend on this symptom alone. It should be united with the dead sound on percussion, in order to satisfy you that there is bronchophony dependent upon tubercular deposition. It is well to compare the sound on each side; for the deposition generally takes place more on one side than on the other; and frequently it occurs *only* on one side; and your suspicion will be increased, as to the really unnatural loudness of the voice, if you hear it louder on one side than on the other. You will be much more satisfied of the real existence of this disease, by comparing the sound of both sides, than if you merely attend to one. The difference of the two is frequently very manifest.

But when the tubercular mass softens, and a portion is discharged, so that the cavity is emptied, or nearly so, you have a new symptom. The bronchial tubes, you know, enter this cavity; and as the air enters it, you have the same state of parts there that there is in the trachea;—that is to say, there is a large space, into which, on inspiration, the air enters; and consequently, when the patient speaks, you will have the same sound that occurs on putting the stethoscope over the trachea. If you place the stethoscope over the trachea, you have the voice traversing the tube, as though the mouth were at the other end; and just the same occurrence takes place, when you put the stethoscope over a cavity in the lungs;—you have the phenomenon called *pectoriloquy*. If you make the patient cough, you hear a mucous rattle;—the same sound as if air were forced through soapsuds. It is a gurgling sound, arising from air agitating a viscid fluid. But as the contents grow less and less viscid,—as the curdy matter of the scrofula is more and more spit up, and mere mucus forms, more and more, the contents of the cavity, the gurgling is heard louder, and is found to be freer. Then, if you make the patient breathe quickly, and at the same time rather deeply, you hear the same sound that you do if you make him breathe quickly, and put the stethoscope over the trachea. In the latter case, you have the sound of the air evidently going through a large space;

and the same circumstance occurs in the former instance;—merely arising from the part being of the same description as the trachea. You have the same phenomena with respect to simple respiration, the same phenomena with respect to the voice when the patient speaks, and the same phenomena when you make him cough, that you have when you place the stethoscope over the trachea;—that is to say, you have pectoriloquy. You may, however, have the same symptom of pectoriloquy in the most perfect health, if you listen over a certain part of the chest;—especially in thin persons. If you place the stethoscope between the clavicles of a person who is thin, you have pectoriloquy; because the large bronchia going to the lungs, emit the sound of a tube, even if the individual be healthy. You must not, therefore, pronounce a person in a state of phthisis, simply because you have pectoriloquy between the clavicles; but when you hear it decidedly in other parts of the chest, then there can be no doubt as to the nature of the case.

When things have come to this pass, you no longer have the dull sound on percussion, that you had in the first instance. The tubercular solid mass, which gave the dull sound on percussion, no longer exists; and consequently there can no longer be the phenomenon which it produced. That phenomenon was a dull sound, from the part being solid. The part is now hollow; and on striking over it, you find the sound as hollow as in health; and perhaps *more* hollow. It is to be remembered, that though you have pectoriloquy, and you thus have a large space which ought not to be there; yet the phenomenon does not shew the nature of the cavity; and it is only from the general symptoms, that you are satisfied it is the cavity of phthisis. You will recollect that I mentioned, when speaking of gangrene of the lungs, that a part of the lung is sometimes separated, —discharged; and that a cavity will exist, from that circumstance; so that you may have pectoriloquy from gangrene of the lung. But then you know that it arises from gangrene by other circumstances; —such as the great debility of the patient, and the fœtor of the expectoration. You may, from chronic bronchitis, have the bronchial tubes very much enlarged at one spot;—as large as the bronchia themselves, or approaching to their size; and in that case you will have pectoriloquy; but then there will not be present the general symptoms of phthisis, and thus you will suspect the nature of the case. You see that no reliance is to be placed on the ear alone; and that the symptoms which are *audible*, are only to be taken in conjunction with those which are *general*. Persons find fault with auscultation unjustly, who suppose it is employed to the exclusion of attending to other symptoms. No person who uses his ear, is justified in making so absurd an application of it. The person who is disposed to employ his ear, ought to be careful in adopting all the means of making observations within his power. A person may be labouring under ulceration of the lungs; and yet he may not afford the sign of pectoriloquy. If the cavity be near the surface of the chest, and the walls of the cavity be very thin, and if the bronchial

tubes that open into the cavity, have mouths so small as to bear no proportion to the cavity itself, you may have a large cavity, and yet no pectoriloquy at all. Here, again, is an instance of the fallacy of the observations made by the ear alone, to the exclusion of the other symptoms. Like every body else who has attended to these matters, I have over and over again opened patients, and found a large cavity after death; where, before the fatal termination of the case, there had been no pectoriloquy at the affected spot. The walls of the cavity must be a certain thickness, for the phenomenon of pectoriloquy to be produced; and the bronchial tubes opening into the cavity, must bear a certain proportion to it; for when the cavity is near the surface of the lung, and the substance of the lung has been entirely destroyed, so that there is merely pleura forming the parietes of the cavity, you will cease to have pectoriloquy. If, however, you had seen the patient before the cavity became so large, as to be out of proportion to the bronchial tubes opening into it, and the walls became so much diminished, then you would have had pectoriloquy. But you may not have been called in before the patient arrived at this state; and therefore may not have had an opportunity of observing the successive changes.

When an excavation is very large indeed, you will sometimes have another phenomenon;—you will have what is called *metallic tinkling*. By this is meant a sort of silvery, ringing, metallic sound, when the patient coughs, speaks, or breathes; but particularly when he coughs;—a clear metallic ringing, which can hardly deceive you. But the sound is not peculiar to this affection; for when the surface of the lung is ulcerated, and air escapes into the pleura, that being a very large cavity, it just gives you the same phenomenon. When air enters into the pleura, you have metallic tinkling, from the presence of the air and fluid together; but if it so happen that there is a large cavity in the lung, that will come to the same thing; and the air and fluid entering into it, will give rise to the same sound. The cavity, however, is seldom so very large as to produce it.

You seldom examine a patient at that point, when much information is to be derived from the ear. In the first stage of the disease, there is nothing to be learned from it; and as the disease proceeds the case is generally perfectly clear, without the use of the ear; but if a set of symptoms do present themselves to the ear, they are as worthy of being observed as those that present themselves to the eye; and the mere trouble of examining them, can be no excuse for not observing them. Unfortunately, in the great number of instances, the case is too severe to render such examination necessary; but cases do occur where the disease is not so severe; and some will say that the affection is *bronchitis*, while others assert that it is *phthisis*. Persons are said every day, by those who do not use the ear, to be in a state of phthisis, when they are not; and *vice versa*. Now if the ear be used after a certain time, and we ascertain the existence of a cavity; this, in conjunction with the other symptoms, will render the case clear. The examination must not be too late; or

the phenomenon of pectoriloquy may have ceased. It is of great importance to be able to say that there is pectoriloquy; for a practitioner may have said that it is not phthisis at all, and he will stick to it; but if you listen, and hear pectoriloquy, you may be sure that he is wrong; and may be able to convince him of it. It is a fact that some practitioners who have taken a predilection for other organs,—particularly the liver, or the viscera of the abdomen,—may declare that there is no such thing as phthisis present; while it is evident enough that the patient's lungs are rotten. Now if, in a case like that, you can induce a person to listen to you, and can shew him the difference between the sounds in health, and those in this disease, you may open his eyes; or you may bring forward such an argument as cannot be resisted. It would be unphilosophical not to know these things; and not to attend to them if they do exist.

When you find such a state of things as this, the prognosis must always be unfavourable. If only one part of a lung be beset by tubercular deposition, it is possible that the substance may soften, be expectorated, the part heal, and the patient do very well. It is possible that you may have pectoriloquy,—that you may have signs of confirmed phthisis; and that yet the patient *may* recover. Such things, however, are exceedingly rare. I doubt whether it is a very common thing for these excavations to heal at all; but it is a far more uncommon thing for the patient to get well; because, in general, the disease is constitutional; and if one excavation should heal, a crop of tubercles occurs in some other part, and goes through successive changes; and under these the patient will sink. When you open a patient who has died of phthisis, you almost always find tubercles in various stages; and if you could heal one lung entirely (as it has been proposed to do, by making an opening into the chest, and causing the lung to collapse) I doubt whether you would do much good; because the other lung is generally beset with tubercles, which will regularly go through their stages in the same way. But I do doubt very much, whether these cavities heal so frequently as has been supposed. I am quite sure, on account of the succession of tubercles, that persons rarely recover; and I doubt whether the cavities heal, so often as Laennec thought they did.

Laennec says, that he has frequently seen a cicatrix in the lungs;—that a cavity had existed and healed; that the sides had come together; and that the part become solidified and hardened;—just as is the case with a cicatrix on the surface of the body. The appearance spoken of by Laennec, as indicative of a healed cavity, is a depression, or puckering, on the surface of the lung;—just as in a cicatrix on the surface of the body, when there has been an abscess below. If there be merely superficial ulceration, you know that a scar is left; but in proportion to the depth of the ulceration on the surface of the body, and in the parts immediately below the surface, so is the depth of the cicatrix and of the puckering. This appearance is sometimes seen on the surface of the lung; and Laennec says that, on cutting down on such a part; you find below it induration, to a

greater or less depth. My reason for doubting this is, that you see exactly the same appearances upon the liver. Almost every month, if you open many bodies, you find a puckering on the surface of the liver;—a depression, with a puckering all around it; and, on cutting into it, you find the substance of the liver unnatural as to colour. But there is no ulceration; in fact, there *could* have been no ulceration,—no suppuration; for there are no signs of there having been any matter. The peritoneal surface of the liver will fall into a state of chronic induration; here and there it will become indurated and hard, and it is commonly puckered; and there you have the appearance of so many scars. Now the same thing, I know, will take place in the lungs. You may see them puckered, and you may see the pleura very hard there; but I cannot see that that is any reason for believing that there is a cicatrix. And you may be deceived from finding a large track of some depth down the lungs, (which should not have deceived Laennec), from a mere cohesion of the different lobes of the lung. It is common, when there has been a slow thickening of the pleura,—to say nothing of inflammation,—to find the lobes glued together, and the pleura between the lobes thick, and almost cartilaginous. Sometimes there is a puckering on the surface; and, on cutting down, you find a cartilaginous hardness to some depth; and, on careful examination, you find a cohesion of the different lobes. Independently of that, the pleura will fall into the same sort of disease as the peritoneum over the liver; and will produce just the same appearances. On reading Andral, I find that he has come to the same conclusion as myself; and I have no doubt that others have done so likewise. It is said that, now and then, a cicatrix may be produced; but I am sure it is a rare occurrence.

But sometimes people, without any cicatrix, get rid of this tubercular deposit. When it has occurred only at one spot, an open cavity remains; and so the patients go on, and live for a long time. This, however, I believe, is comparatively rare; it is so common for tubercle after tubercle to take place in the lungs, and go through successive changes, that people generally do not live. It certainly does happen, sometimes, that the lining membranes of these cavities become hard, secrete a quantity of mucus, and so remain during the rest of life. No further mischief is done; pectoriloquy is always heard; and the patient is only troubled with cough and expectoration. But this, also, is comparatively rare.

Now and then,—but this likewise is an uncommon occurrence,—death will take place from ulceration extending outwards through the pleura. In cases of this description, the patient is generally seized with a sudden difficulty of breathing. On striking the chest, you find that there is a very clear sound; and (as you may suppose from the air escaping from the lungs to the pleura) the lungs become more and more collapsed. If it occur on the left side of the chest, the force of the air will be such, as to drive the heart to the right side. This is called "*pneumo*-thorax;" but, as I shall after-

wards point out, it should be termed "*pneumato*-thorax." I shall speak of this when I come to diseases of the pleura; but it is to be remembered that, now and then, ulceration is not confined to the lung itself; but that the pleura becomes ulcerated, or is rendered so thin, that it gives way; and then you have air and fluid in the pleura. I shall speak of that more particularly hereafter; but I must now mention it as one of the effects of consumption. In general, nature prevents this,—however near to the surface the cavity may be,—by causing adhesions. You will recollect I mentioned generally, that when a tubercle is near the surface of the lung, the pulmonary and costal pleuræ, one or both, throw out lymph, and become glued together; so that ulceration may go on within, and yet neither air nor fluid can escape into the pleura. But now and then nature fails. A tubercle exists near the surface; the ulceration goes on; no adhesions take place; a perforation is produced by the ulcer; and the phenomenon of air and fluid in the pleura occurs.

Besides those morbid appearances, and those symptoms which I have mentioned as occurring in phthisis, you will find a variety of others in different patients. Some have very great disturbance of the digestive organs; some have tenderness of the epigastrium, tenderness of the abdomen where the small intestines lie, and tenderness likewise of the liver. Some have very little appetite; but a large number have an *excellent* appetite; and digest and eat well, to the last moment of their existence. It is very common for a fistula to form by the side of the rectum; and it is very common to find, after death, a considerable inflammation of the mucous membrane of the intestines. It is by no means uncommon to find the intestines ulcerated; to find a scrofulous deposit in the mesenteric glands; and to find the liver more or less diseased. The French have attended, very minutely, to the proportionate occurrence of these different morbid affections of other parts. I believe you will find in the work of M. Louis (a physician now living in Paris), the most accurate information on this point.* It is very common to find the trachea ulcerated;—to have a scrofulous deposit in various parts of the trachea; particularly about the larynx. In some instances you have soreness, violent cough, and every other mark of chronic disease of the larynx; whereas, in other cases, there is no hoarseness, or other sign of affection of the larynx or trachea; except a little inflammatory irritation, indicated by an excessive secretion of mucus.

I do not know that it is worth while to state these things particularly. In phthisis, you will very often find an inflammatory state of various parts of the abdomen. You will very often find fistulæ; and often organic disease of the liver, and oftener still of the intes-

* "Recherches Anatomico-Pathologiques sur la Phthisie. Par P. C. A. Louis, M.D." This, our most able monograph on Phthisis, has found a translator every way qualified to do it justice, in Dr. Cowan, of Bath. I confess the great pleasure I have in referring to the labours of Dr. Cowan; for some of my pleasantest recollections are linked with the time which we spent together at Edinburgh. At that period, my friend gave the brightest promise of future excellence;—a promise which time is rapidly ripening into mature performance.

tines. Now and then, scrofulous tubercles are found in the brain, or at least under the pia mater; but, for the most part, the head remains perfectly free.

There can be no question, that the disposition to this disease is frequently constitutional,—frequently hereditary. Those who are most subject to it, are usually fair persons; with light hair, a sanguineous temperament, soft skin and hair, and long pointed fingers. Their flesh is flabby,—not firm; and the pupils of their eyes are large. They are frequently thin and tall; but whether they are tall or not, persons of this description are slender, with a long neck. Frequently, too, such persons have been subject to hæmorrhage from the nose when young. There is another description of persons subject to phthisis; comprehending those who are not tall, but short; and who have not light hair and a fair skin, but are rather swarthy, and have dark hair and dark eyes. These also have large pupils; and their skin is rather soft; and instead of having *long*, they have *short* fingers and nails. Like the others they are of a lax fibre;—their muscles being flabby; and persons of this latter description, generally have a tumid upper lip. There are, therefore, two descriptions of persons most liable to phthisis. Both, in general, have a soft skin, soft hair, a flabby fibre, and a pale look; but those of one set, if they be not tall, are slender; and generally have light hair and a florid complexion; and are disposed to hæmorrhage; whereas the others are short, with dark hair, a tumid upper lip, and short truncated fingers. This form of body is of course constitutional; and it likewise may be hereditary; so that the disposition to phthisis may be said to be, in many persons, constitutional and hereditary.

A certain age is more liable to the disease than any other. In this country, scrofula is more likely to occur, in the lungs, between the age of eighteen and thirty, than at any other period. When it occurs later than this, it is perhaps more frequently the result of unfavourable external circumstances, acting upon constitutions moderately disposed to it, than of the mere intensity of the predisposition.

There can be no question that it is greatly predisposed to by bad food, bad lodging, and bad clothing. Many would escape the disease, were it not for their being exposed to wet and cold, being badly protected in the way of lodging or of clothing, and not fortified with the means of resisting wet and cold, by good food. The latter keeps up a good fire within; and compensates, in a great measure, for the unfavourable state of the atmosphere. Hence the disease is much more frequent in countries which are wet and cold, than in others; and it is more frequent in countries which have cold and wet alternating with warmth, than in those which are simply cold. For example,—I believe it is not so common in Russia, as in many other warmer parts. Alternations of temperature, especially cold and moisture united, alternating with a warm temperature, seem to have the greatest effect in exciting the disease; and to be the great pre-

disposing cause,—next to hereditary, constitutional disposition, or the want of food, clothing, and lodging. It is far less frequent in *tropical*, than in *temperate* climates. Indeed, it is said that real strumous phthisis is unknown in the tropics, or is confined to the European settlers; who bring the disposition to it from unfavourable climates. It is a disease seen, more or less, in all parts of the world, or nearly so; either occurring among the inhabitants, or among those who come from countries where it is very common. Some ascribe the comparative rarity of the disease (I only say "*comparative* rarity") in Russia, to the circumstance of the people having good clothing,—being clad with furs and other warm materials, and eating plenty of animal food. All the inhabitants of cold climates, eat a large quantity of animal food; while those who inhabit warmer regions, care little about it, and live principally on vegetables. The diets of Italy and Russia are completely different. To show the effect of clothing upon the disease, it is said that it was unknown in Scotland, before the people changed their dress from woollen to cotton. I suppose that is an exaggeration. Formerly, it is alleged, that, in Scotland, the people were all dressed in woollen, as the Romans were; but that since they have changed it for cotton, the disease has become very prevalent. The disease is said to be the least prevalent among butchers, fishermen, and fishwomen;—the women who sell fish; and who, in Scotland, are called "fishwives." The cause is said to be, that these people eat plentifully of animal food.

When the predisposition is very strong, the most favourable external circumstances can scarcely keep away the disease. You will see a family, brought up with every care in guarding against cold, having good food, good clothing, and good lodging, and attention paid to the slightest indisposition, and yet, one after another,—especially if they be females,—they become the victims of this disease. On the other hand, where the disposition is not so strong, by taking great care to avoid vicissitudes of temperature, to dress very warmly, and to be well nourished, people escape it. And if persons intermarry who have this disease in their respective families, who themselves are disposed to it, and perhaps afterwards die of it, one or both, the affection is almost sure to be transmitted to the offspring. You must have all seen instances of the death of children, whose mother died some years before of the same disease. Where two first cousins marry together, the predisposition derived from this unfortunate mixture becomes so powerful, that a very phthisical offspring is generally the result. Whoever belongs to a phthisical family, should endeavour to "cross the breed," by marrying some one that is not phthisical; because, although it is delightful to marry a lady delicately beautiful to all appearance,—having white teeth, a fine skin, soft hair, and so on,—yet misery is sure to be the consequence. The disease is almost sure to begin; and the offspring perish one after another.

The immediate exciting cause of the disease, when one is apparent,

is generally that of any common inflammation, any common cause of catarrh. Exposure to cold, more particularly cold and wet, especially when applied partially, and again, especially when the body is overheated, is the most common exciting cause. Persons with a strong predisposition, catch cold from the slightest causes;—from something that would be insufficient to give another individual cold; and what would be mere *catarrh* in one person, becomes in the other the commencement of *phthisis*. Sometimes tubercles have already existed in the lungs; and these merely produce inflammation in the organ. In other cases, inflammation is induced in the air-tubes; and the disposition being strong, the debilitating effects of the inflammation, lead to the production of the tubercles.

Whatever exhausts the body may produce this disease. When persons are predisposed to it, they will have it come on without catching cold at all; but simply from over-exertion of the body, or over-exertion of the mind. But where there is mental exertion, there is almost always anxiety. It is seldom that a person is occupied mentally without anxiety; and therefore anxiety may, in a great degree, be the cause of the disease. There can be no doubt that the depressing passions will produce the disease. I have seen a case myself, where, in a predisposed family, an individual has become the victim of phthisis, decidedly from the very time that some great source of grief occurred to him. Powdery substances in the atmosphere have excited the disease;—not simply in cases where there was a strong predisposition to it,—but where the powdery dry substance is of a hard nature, (such as portions of metal, or of stone), the disease is produced almost without any predisposition being discovered. There are certain occupations, in which fine particles of stone are diffused through the atmosphere; and others in which fine particles of *steel* are so diffused; and the persons exposed to these, very frequently die of phthisis; so that, in some parts of the country, where these trades prevail, few men, who work at them, live beyond forty; and many die much before that time.

It has been supposed that the disease will arise from contagion; but it is in foreign countries that this idea prevails. It is believed in Languedoc, Spain, and Portugal; and the clothes of patients who have died of this complaint, are there burned by the civil authorities. Morgagni was so frightened at the contagiousness of this disease, that he never opened the body of a person who died of it; but that was evidently the result of a little nervousness, rather than of his better judgment. It is mentioned as being contagious by Morton,—a writer on this disease in our own country; but it was not so considered either by Hippocrates or Celsus. I do not believe that it is in the slightest degree contagious. Like others practising medicine, I have seen hundreds and hundreds of cases of the disease; but I never saw an instance, in which there was a shadow of probability for the doctrine of contagion. I have seen husbands nurse their wives, and wives their husbands; and I am quite sure that where the survivor has become phthisical, the proportion has not been greater

than you might expect, where a disease is so prevalent as phthisis. It is not uncommon for persons, in the same family, to fall into it where there is great anxiety. I hardly recollect a case where the husband has died of phthisis, and the wife has fallen a victim to it immediately afterwards, where there has not been a predisposition to it. I have seen so many hundreds of examples of the reverse, that I do not think the proportion is greater than it would be, if it were a matter of absolute certainty that the disease is not contagious at all.

The presence of other diseases will excite this. It is very common for phthisis to come on after inflammation of the lungs, and after severe bronchitis, peripneumonia, or pleuritis; but it is certainly very often the case, that the inflammatory disease which has preceded it, has been the result of a general predisposition to disease in the region of the chest. Sedentary occupations, of all descriptions, must be unfavourable in this disease; because, in sedentary occupations, there is a want of fresh air, as well as of due exercise. In such occupations too, there are generally many persons collected together; and unhealthiness, of all descriptions, must be engendered. With some, the exciting cause has been great respiratory exertion;—such as excessive public speaking, excessive reading aloud, excessive blowing of wind-instruments; and some have had symptoms of phthisis, which have declined after giving up the flute, or some other wind-instrument. The disease has frequently been excited by mercury. It is very common for us to see persons who have been in the foul wards of an hospital, and undergone a considerable administration of mercury, fall into a state of phthisis. Excess in venery is likewise, by no means, an unfrequent exciting cause. I have seen many young men die of phthisis, a twelvemonth after their marriage; although they have shewn no signs of it before. You will sometimes have an abscess of the lungs;—you will sometimes have an abscess of the *liver*, making its way, and producing an adhesion to the diaphragm, and of the diaphragm to the lungs, and so on; but all this is not *phthisis*. Where, however, there is a great predisposition to the disease, this may be the exciting cause.

With regard to the *diagnosis* of the disease, it must be made out by general observations respecting the patient;—general observation as to predisposition, and as to constitution. Then, again, as to the *progress* of the disease, if a person has had, for a great length of time, cough, which has generally increased;—if there has been a falling away in flesh; and the individual has not passed the middle period of life, but is between eighteen and thirty;—if these symptoms occur, and there has been phthisis in the family, you have still greater reason to suspect the formation of tubercles. If, in females, there be a suppression of the menses;—if, in males or females, the ends of the fingers become enlarged, and there are frequent attacks of hæmoptysis, together with a continual cough,—the case will be rendered still more suspicious. By means of the stethoscope you may ascertain, after a time, whether there is a cavity or not; but the diagnosis of this disease is but too easy, after the affection has once formed.

As to the *prognosis* it must always be bad. It must be a very happy circumstance when a person recovers from tubercles in the lungs; but you ought never to calculate upon it. It is a great blessing when it does take place; but you should never expect it.

The *treatment* of the disease must be totally different in different circumstances. Very little can be done, in general, after it has gone on to a certain length. We can then do something to alleviate suffering, it is true; but before it has occurred, unless the predisposition be very strong, I think that much may be done in preventing it;—provided the person be in a situation to enable him to do what you wish. The great mode of preventing phthisis, when there is a predisposition to it, is by invigorating the body as much as possible; —by taking care that the individual shall have plenty of fresh air; shall go out every day; have just exercise enough, without producing fatigue; have a good portion of rest at night, and never be deprived of it; eat plenty of animal food of the best quality; and take malt-liquor, or a certain portion of wine, if it can be borne. Malt-liquor is the most invigorating; while, for the most part, wine merely stimulates, and in most cases does harm. The state of the mind is also of very great importance; and the utmost care should be taken to commit no excess in study, exercise, venery, or anything else; so as to do nothing that can do harm, and yet maintain all the functions of the body. The utmost attention should be paid to clothing. A large number of females, in this country, fall into consumption chiefly through their own fault. The poorer classes cannot dress well,—cannot be expected to take that care of themselves which they ought; because they have not the means; but the rich, and the middle classes, do everything they can to fall into consumption. They do not wear sufficient petticoats. They wear silk stockings, and the thinnest shoes, and so walk out; or if they do not walk out thus attired, they stand on the steps of the door, and often go some yards on the pavement, before they get to their carriage. They will go from the hottest rooms without anything about their feet. They take little sleep; have party after party every night; and then, at last, fall into a state of consumption. Neither themselves nor their friends will believe, that this want of rest, and this extreme excitement have been the cause of it; but I am quite sure they have. I think I have saved the lives of several young ladies, by insisting on their following my advice of wearing plenty of flannel;—flannel-drawers, flannel-waistcoats, and high dresses, so as to come up to their collar-bones. I have seen several who appeared to have every disposition to phthisis; but who, by wearing flannel next the skin, from their collar-bones to below the knees, have passed that age at which phthisis, in all probability, would have begun; and they have ultimately done well. I have taken care to add to this good living; —making them take meat at least once a-day. Many wish to make themselves look slender and genteel; and therefore they starve themselves, as well as dress in thin clothing. You should make them eat meat once or twice a-day; and take an allowance of malt-liquor.

If you can do all this, you may in many cases prevent phthisis; especially if, in addition, you can make patients use the cold shower-bath. Many cannot bear a cold shower-bath, at first; but they can bear a shower-bath *tepid*; and by degrees they can bear it *cold*. It was only a few days ago, that I saw a young gentleman, whose brother died of phthisis. He expectorated blood at the same time as his brother; and they appeared equally disposed to phthisis. In one, the disease ran on very fast; and he died. The survivor was spitting blood continually; and the pupil of his eye was large. I prevailed upon him to begin the use of the shower-bath; and he has done so all the winter. The result is, that he has lost his cough, spits no more blood, and is now a strong young man. No doubt, if he take care of himself, and commit no excess of any description, he will go on well. I do not know any means so powerful in hardening the body, as the use of the cold shower-bath; but it is to be remembered, with respect to hardening, that you cannot harden *every* person, and that you may kill many in the attempt. Some ladies, in order to strengthen themselves, will go out of doors in the most frosty weather; and by that means often injure themselves. You may make the most delicate hot-house plant hardy, by lowering the temperature gradually; but what will *harden* one, will *kill* another; and what will not harden one at all, would be quite sufficient to harden another; and therefore the greatest care should be employed. Some try to harden themselves by having the window open; and they glory in having snow on their coverlet. Some can bear it; but a great number never could bear anything of the kind. Still, I am sure, it is proper treatment to harden people as much as can be borne.

You find, however, that some persons are so disposed to an inflammatory state, that it is not at all admissible to give them wine, beer, and meat. They may be of so inflammatory a disposition, that the utmost you can do is to clothe them well, make them guard against catching cold, and order the shower-bath. Some persons are so disposed to hæmorrhage,—hæmorrhage from the nose, and then hæmorrhage from the lungs,—that nothing stimulating can be allowed. There are such cases; but I know that, in the greater number of instances, by fortifying the constitution well, and adjusting the means used to fortify it, to the state of the constitution, you may do great good.

When the predisposition is very strong, it is not only necessary that the patient should most carefully avoid catching cold, by wearing warm clothing when he is out of doors, and by avoiding all danger arising from wet feet, but the temperature of his room should be prevented from falling too low. In many cases it is necessary that the bed should be warmed; but others, not so delicate as that, should have a fire in the room, either when they go to bed, or when they get up,—once in the twenty-four hours,—for the purpose of thoroughly warming it. Some persons are so delicate,—so disposed to phthisis, that we can hardly allow them even to go out during the winter; and a certain degree of artificial temperature must be main-

tained in their rooms; but these are cases where the predisposition is extreme, and the debility very great.

It is also of great use where there is a strong predisposition, to send patients to a warmer climate than our own,—to a thoroughly warm climate. One of the best places to which they can be sent is the West or East Indies. If that be too far, one of the best places is the south of Spain, or the south of France. Many parts to which people are sent, are very objectionable. Lisbon, for example, is very cold in the winter; and both Venice and Naples have high mountains in the neighbourhood; and therefore are not good. If you cannot send patients to the East or West Indies, the south of Spain and the south of France are certainly among the most proper places. But many cannot go even there; and for them the warmer parts of England are the only situations left. I need not mention, that parts of Cornwall and Devonshire are the most suitable; and I believe Penzance is particularly so. Nearer to London, one of the best places is Hastings. Many persons have an idea that if, instead of living in London, they go to Brompton, they are more protected from the disease; but I do not know whether there is any thing in that opinion. I have heard practitioners found fault with, for allowing their patients to live in London, and not sending them to Brompton. The latter has a great name; but I do not know whether it deserves it. But all this must be done before the disease is fully formed; for when it is once established, I think it the greatest cruelty imaginable to send patients abroad. It is horrible to see the grief it occasions; and the patient dies of consumption after all. To send them away from home, and suffer all the misery of the journey, is not only very absurd, but very cruel. It is much better, when the disease is once formed, to allow patients to remain at their own home, where there is every comfort around them.

When the disease has formed itself, the treatment must be very different in different circumstances. You generally have to subdue or mitigate inflammation. There are frequent attacks of pleuritis, bronchitis, and peripneumonia. You commonly find the pleuræ, or the lungs (including the air-cells and bronchia), or both, in a state of inflammation. Persons are continually seized with violent stitches in the side; and it is necessary to take away a little blood;—four or six ounces, sometimes more; or to cup the part, or to blister it. You find the blood buffed; and you have to treat the case, for a time, as one of inflammation of the chest, but conjoined with little power of the constitution. In these circumstances, of course it is necessary that the diet should be low. If patients be seized with hæmorrhage, it is often necessary to treat them in the same way. It is generally necessary to bleed the patient to some little extent; and to keep him on low diet. When there have been attacks of inflammation or of hæmorrhage, it is necessary, for some days, to pursue antiphlogistic diet; but these may all subside, and you may have recourse to nutritious diet again, or now for the first time, if you have not resorted to it before. It is right, however, not to take alarm at

every pain which a phthisical patient may have in the side; for many such attacks will go away, without any strong antiphlogistic measures; and many will go away from the application of a blister, or of a mustard-poultice, which is one of the best things. If, however, that will not remove it, it is requisite to bleed; and to treat it in the common antiphlogistic manner.

Supposing, however, that there is no inflammation or hæmorrhage to subdue; and that the patient is free from pain, and has been so for some time,—then you have to support him as well as you can, and to lessen the irritation. It is often indispensible to give meat and malt-liquor. You see many persons, in phthisis, the better for having meat. Wine (as I said before) has a tendency to stimulate; and therefore should not be given; but ale will often be proper. In a great number of cases, you have to consider that the patient is just in the same situation as an individual having a large abscess in the extremities; which abscess, from pouring forth an immense quantity of fluid, has exhausted him. In that case, you must allow meat and beer, in order to support the patient; and you must administer opium to lessen the irritation; and, in phthisis, the treatment must be conducted precisely in the same way.

In this state of things it is very useful, when there is no inflammation,—no hæmorrhage, to give tonics; and of all tonics iron is by far the best. The use of what is called "Griffiths's Mixture" is well known. There was a Dr. Moses Griffiths, who made a mixture of iron and myrrh; which is a very good form. But the myrrh is nauseous; and, after making a number of trials, I am satisfied that the iron will do as well *without* the myrrh, as *with* it. The sulphate of iron answers exceedingly well; and when you recollect how often in this disease there is cough, out of proportion to the regular irritation that takes place, you may see that the iron may relieve the cough, even to a greater extent than it supports the constitution. I mentioned before, that many cases, which have been supposed likely to end in phthisis, have given way to the exhibition of iron. If the sulphate purge the patient too much, or excite the pulse, you may give the carbonate, which is rather the milder form of the two. If you exhibit two or three grains of the iron, three times a day, you will see patients gain strength up to a certain point; and their cough will diminish. The relief, it is true, is only temporary; but you do good for a time; and it is your duty to protract life, without considering whether it is useful to the patient or not. We are to follow the invariable rule of saving or protracting life, whenever it is in our power to do so.

In this state of things, though you cannot use the shower-bath, you may do great good, and produce great comfort, by sponging the patient well with vinegar and water. You may even check the hectic sweats, better by vinegar and water, cold or tepid, than by any other means. When, before the disease is formed, persons cannot bear a *cold* shower-bath, they can bear it *tepid*; and when the disease is fully formed, a *tepid* bath is frequently borne, though patients cannot bear

the *cold* bath. Tepid sponging is very beneficial; and it is better, perhaps, if vinegar be mixed with the water;—at least, so it is said. Many persons, when they have expectorated pus, have, from *tepid* sponging, come to bear *cold* sponging; and have found the greatest relief from it. That is to say, when hectic heat is upon them, they find it very comfortable; and, as I have mentioned many times, the feelings of the patient should always be consulted.

Among the means of lessening irritation, opium is one of the very best. I need not say, there are other things used for that purpose;—such as hyoscyamus, conium, and extract of lettuce; all of which do a certain portion of good, and are very often even more eligible than opium; because the latter may disagree. I believe the best preparation of opium is muriate of morphia; for it has seldom more than one unpleasant effect; namely, constipation; and even that is often a good thing in phthisis, because there is generally a disposition to relaxation of the bowels. A quarter of a grain of muriate of morphia, is equal to a grain of opium; and is more certain in its operation, than any other form of that drug. A solution of it is very cheap.

You may sometimes lessen the irritation, by making the patient inhale the vapour of various drugs;—by having a vessel three parts filled with warm fluid, and making a patient inhale through it. You must have two tubes to the vessel, so that the air may pass through the body of the fluid by means of one, while you are drawing it out by means of the other. The tube which admits the air must go to the bottom of the liquor, so as to convey the atmosphere through it; and the tube to be inhaled from, must be fixed above the liquor.* The agents which have been chiefly tried are, first, a very minute quantity of iodine, mixed with hydriodate of potassa; and, secondly, chlorine. I have seen more *mitigation* from the chlorine than from the iodine; but I have never seen a case *cured*. I have used them both perseveringly; but I never saw a case of phthisis cured by these means; and I do not believe that a case ever *was* cured. I have known a single drop of tincture of iodine, put into a pint of fluid, produce great irritation; but chlorine is borne much better. The mitigation afforded by it, however, is but temporary. The mode of

* The particularity of this description is by no means uncalled for; and a medical man, when he orders a patient to inhale vapours, must give his personal attention to the manner in which it is performed, if he wishes to have his intentions efficiently carried out. On one occasion, in a large hospital, when a patient with ulcerated sore-throat had been ordered to inhale steam, the Editor (on paying the evening-visit) found him with the tin-inhaler comfortably tucked under the bed-clothes, with a cork stuffed into the air-tube. The consequence of this was, that the patient was obliged to remove his mouth from the instrument after every inspiration; and, after all his laborious efforts, the supply of steam was very insufficient. The nurse (in every respect an excellent one) on being questioned as to the use of the cork, very naturally replied that it was "to keep in the steam;" and added, that she had been in the hospital eleven years, and never saw an inhaler used in any other way. There is nothing surprising in all this. Nurses are not expected to understand the principles of pneumatics. On instituting an inspection of the other inhalers in the hospital, every one of them was found duly provided with a cork!

using it is this:—into three-fourths of a pint of water, you may drop four or five minims of a saturated solution of chlorine. It is best to begin with one or two minims, and to increase the quantity gradually, as the patient can bear it; but if you at last arrive at a quantity which he cannot bear, you must then desist, and go back to what he can bear. Some have recommended the exhalations of tar. Tanners, as well as butchers, are said to escape the disease; and I have employed the liquor from tan-pits, in which there is an infusion of oak-bark. I have made people inhale it; and some have found considerable relief. Others, however, have found the smell so unpleasant, that they could not go on with it. I have not used it long; but as to its curing the disease, I should imagine that is out of the question. I believe that no means whatever will affect so desirable a purpose.

The great indication, when phthisis is once established, is to subdue inflammation if you can;—whether it occur in the form of pleuritis, or bronchitis, or peripneumonia. Besides this there is an indication, on the other hand, to support the strength by nourishing food and tonics; and a third indication is to subdue irritation by narcotics. You will find it necessary to attend to another indication;—the removal of urgent symptoms of various kinds.

You will continually find a person sweating so profusely, that his strength is thereby greatly diminished, and this may often be subdued by washing him all over with tepid vinegar and water, several times a day; or by the exhibition of sulphuric acid; and sometimes, again, by superacetate of lead. You will also frequently have to subdue another evacuation, which is purging. This, of course, is to be accomplished chiefly by astringents and opium. Unfortunately, the more you subdue one evacuation, the more you increase the other. Frequently, when you check the sweats, the purging becomes more intense; so that while you are lessening the sweating by tepid ablution, it is safe with vinegar and water, for example, to give astringents, lest diarrhœa should suddenly begin. Diarrhœa is one of the most tiresome symptoms in consumption; and very frequently astringents and opiates do not succeed in arresting it, on account of the inflammatory state of the mucous membrane; and yet the patient is too weak to enable you to apply leeches; and suffers so much altogether, that it is very painful to apply blisters. In many cases, fomentations or poultices of bran applied to the abdomen, will be as good means as you can adopt. Frequently the largest doses of opium (such as will produce great stupor), and the largest quantity of astringents (such as almost overload the stomach), have no tendency to check the diarrhœa. For a long time they may succeed; but at last, in most cases, the diarrhœa becomes so severe and obstinate, that they lose their effect. It is remarkable what a large quantity of astringents and opium you may give, with little or no benefit. However, we must do our best; and astringents and opium are certainly the best modes of checking the diarrhœa. Frequently there is ulceration of the intestines; and among the astringents, you find

sulphate of copper answer better than any other. It has a tendency to produce sickness; but that may be subdued by hydrocyanic acid. If you exhibit sulphuric acid, it is generally necessary to guard it by laudanum; for its acrimonious qualities, when given by itself, tend to increase the affection of the bowels.

Certain remedies have been boasted of as being capable of curing consumption; but there is no reliance to be placed on any of them. You are continually asked about the propriety of Iceland-moss, and things of that description. There is no harm in them. On the contrary, they are good so far as they are nutritious and bitter; and are very proper things to be given; but there is no hope of saving a patient by them. You will read accounts in which it is stated, that a large quantity of vinegar has cured the disease. Some persons give, in the course of twenty-four hours, about seven ounces of vinegar mixed with seven ounces of water, and sweetened with two ounces of refined sugar; but fair trials have been made with it without success. The balsams have also been recommended; but sometimes they heat the system excedingly, and increase the inflammatory state. Myrrh has been recommended by some; but I believe it does no more good than any other tonic. We have also had the sulphate of copper strongly recommended to us; and it does alleviate the symptoms. I have seen it, I think, when guarded by opium, not only check the diarrhœa, but diminish the copiousness of the expectoration; but it has no specific virtue. Some have recommended us to give a person an ague; but so many persons die of consumption, who have ague, and consumption is so common in aguish parts, that there is no reliance to be placed on this; and it would be great cruelty to give a person another distressing disease, —such as ague,—for the mere chance of doing good once, perhaps, in a thousand cases. Little more can be done than to lessen inflammation, support the strength, lessen irritation, and subdue urgent symptoms; for after all you can do, persons generally die of the complaint. The disease goes on progressively, and we can lessen suffering; but that is all; although, as I have already said, no doubt the disease may be *prevented* by great care.

It is said by Dr. Young, in his work on Consumption, that one-fourth of the inhabitants of Europe die of phthisis. This is a sort of Bibliographia Physica; for the author refers to every work on the subject written previously to his own. Years ago it was calculated, that a thousand persons died of the complaint, in Great Britain, every year; but, in Europe altogether, we are told by Dr. Young,—and I dare say we may depend pretty much upon his estimate,—that one-fourth die of the disease.* The mortality in this country is greater than in Paris. Whereas one in *four* dies of this complaint in Great Britain, only one in *five* dies in Paris, and at Vienna only one in *six*.

Symptoms arising merely from elongation of the uvula have very

* "A Practical and Historical Treatise on Consumptive Diseases; by Thomas Young, M.D. F.R.S."

often been mistaken for real phthisis.* This is a little point worth knowing. When the uvula is elongated,—hanging from the pharynx,—it sometimes produces constant cough; and this leads to a constant expectoration of mucus, and in some cases to emaciation. It happens, now and then, that extreme emaciation has been the consequence of an elongated uvula. Patients, from the constant cough and expectoration, have become emaciated; the tongue has become white; flying pains have taken place in the chest; loss of appetite has occurred; the pulse has become small and unequal; a pain has been felt in the larynx, from constant efforts being made to expel the mucus;—all of which symptoms have arisen from an elongated uvula; and therefore, whenever you are consulted by a patient labouring under these symptoms, it is right to look into the pharynx.

The complaint may be promptly remedied by snipping off the lower half of the uvula, with a pair of scissors. The pain is but momentary; there may be a little bleeding; but the operation is perfectly safe. It is very seldom that such severe symptoms will occur as to be mistaken for phthisis; but sometimes such a circumstance has taken place. Very often, however, persons have a tire-

* There are few subjects within the range of medical science, that modern investigation (powerfully aided by the stethoscope) has more strenuously sought to elucidate, than that of which we have just completed Dr. Elliotson's masterly exposition. The fearful ravages of pulmonary consumption; the insidious nature of its approach; the rapacious cruelty with which, as if in bitter mockery of our dearest sympathies, it loves to select the young and the beautiful for its victims; and the little avail hitherto attending our exertions to wrest the prey from the merciless spoiler;—all this has combined to impart to its investigation no ordinary share of interest. Nor have the difficulties attending the pursuit caused the zeal of its followers to relax; for obstacles in the path of the real votary of science, instead of paralyzing exertion, only lead to greater effort. It is a heartless apathy, equally unworthy of the philanthropist and the physician, that can look at the mass of disease yet unsubjected to the control of medicine, without humiliation at its extent, and anxiety for its diminution! And who shall say that its diminution, nay its final extinction, may not ultimately be accomplished? There are depths in science, and in medicine too, of which our present means of investigation only serve to show the profundity; but who will venture, either in the one case or in the other, to set bounds to the future advancement of knowledge? With the recollection of what has been already done, is there one in the whole range of diseases, against which the power of medicine shall be declared for ever unavailing? A conquest so noble as this, however, is not to be attained at once. It must be the result of patient and laborious investigations; of multiplied and varied experiments; of impartial and repeated observations. We must be content to ascend the steps, if we would ever attain the summit. It is on this account that every devoted student of medicine must hail, with pleasure, the light which has been thrown on this and kindred subjects, by the French school; and to those who have devoted their lives to an unflinching warfare with disease and death, and to the grateful task of soothing the pangs of suffering humanity, will be adjudged, by every properly constituted mind, a higher meed of applause, than to heroes and conquerors the most successful and renowned!

Various points of interest relative to this subject, are discussed by Dr. Graves, in two lectures which form part of one of his clinical courses;—courses distinguished no less by attractive vivacity of style, than by intrinsic excellence of matter. See the "London Medical and Surgical Journal," for March, 1833, (Nos. 61 and 62; Volume III; Pages 230 and 262).

some cough, which has been mistaken; so that blisters have been applied to the chest, when the symptoms have arisen from nothing more than an elongation of the uvula. With regard to local applications, the best are those which unite astringent with stimulating properties; but in cases where these fail, the operation of curtailing the uvula should be had recourse to.

PLEURITIS.

I now proceed to speak of diseases of the pleura; and, in the first place, of the most common affection of it,—*inflammation.* When the pleura is inflamed, there is of course pyrexia. If the inflammation be idiopathic,—if it be consequent on some local irritation, it usually begins with shivering; and is followed by quickness of the pulse, and all the symptoms of pyrexia. The pleura is a serous membrane; and therefore, in most cases, you have a firm hard pulse;—not invariably, but generally. Then, as to the *local* symptoms, you have almost always severe pain,—an acute, stabbing, sharp pain;—the least attempt at a deep inspiration augmenting this pain exceedingly. This pain is not increased on the *least* pressure. You may press the integuments down upon the ribs, without aggravating it; and you may press moderately between the ribs; but if you press very firmly between them, and still more firmly upon the ribs themselves, you of course will press upon the pleura, and then the pain will be increased. In severe cases there is extreme pain, so that hardly any pressure can be borne; and I have known persons unable to lie on the side, on account of the pressure exerted by the part against the bed. A case must be very severe for there to be pain on *slight* pressure. In truth, you may generally distinguish pleuritis from rheumatism of the muscles of the chest, among other means, by this;—that in the latter case the least touch causes pain and soreness;—such a pressure as will not affect a patient labouring under pleuritis;—pressure on or between the ribs, and at the back or front of the chest. In acute rheumatism, for the most part, there is profuse sweating;—such as there is not in pleuritis; but there is not, in rheumatism, that general disturbance of the constitution, which occurs in pleuritis. In pleuritis, the whole constitution is very much disturbed; and there is not, by any means, that severe pain which there is in rheumatism. In general, you make out the difference of the cases very well. The pain, in pleuritis, is only felt at the lowest part of the chest; or, at least, low down in the chest;—not in front, nor at the back; but towards the side. I suppose the disease has had its name "*pleuritis*," from the pain being observed to be situated in the side (πλευρα); and not from the pleura being inflamed.

The respiration is rapid in this disease, because the patient cannot make a deep inspiration; and to compensate for the want of depth, he breathes the more quickly. The pain is increased by coughing; and it is also increased by speaking. Sometimes patients cannot speak at all, on account of its severity. In general, we make out the

nature of the disease sufficiently, without listening to the chest. This affection is one of the best marked of any with which I am acquainted. There can be no difficulty, except in distinguishing it from rheumatism; and, in general, if you attend to the points to which I have just referred, you will not meet with any difficulty even on that head.

The seat of the pain will sometimes vary in the course of the disease. It will sometimes cease on one side, and be felt by the patient on the other; and it is said that, now and then, the pain is not felt in the part which is found inflamed after death. The pain is felt in the opposite side during life; and opposite to that in which we find marks of inflammation after death. It is said, though I do not recollect seeing such a case myself, that sometimes no pain has been felt at all; and the practitioner has been surprised to find, at the autopsy, violent marks of inflammation. Usually the patient lies best on the opposite side; but sometimes he can lie most easily (or lie *only*, indeed) on the affected side. The cough which attends this disease is usually dry, and not very frequent; and sometimes it is altogether absent.

On listening to the affected part, you generally find less respiration there, than there should be. The part is not much expanded in respiration. You observe that the ribs, at that part, do not move so much as in other parts of the chest that are healthy. Less respiration occurs there; and, on that account only, there would be less respiratory murmur; but there is sometimes considerable effusion of lymph or of serum; and that, of course, will obscure the respiratory sound. After a time, effusion takes place in a decided manner; and then you have a dull sound upon percussion, and no respiratory murmur is heard at the part. There is no *crepitous* rattle heard, as in peripneumonia; and no *sonorous* or *sibilous* rattle, as in inflammation of the substance of the lungs; and therefore with this absence of sound, and the acuteness of the pain, there is in general no difficulty whatever in saying, that the patient is labouring under inflammation of the pleura. Now and then, you will have pleuritis united with peripneumonia and bronchitis; so that you have crepitous rattle as well as acute pain; or you have sonorous and sibilous rattle; but the acute pain, which is unknown in peripneumonia and bronchitis, sufficiently shows that those affections are complicated with inflammation of other parts.

If you inspect the part after death, you find nothing more than I mentioned, when speaking of inflammation of serous membranes in general. Sometimes there is diffused redness; sometimes there is a *striking* redness, and an effusion of lymph on or within the pleura; and sometimes there is serum, occasionally quite clear, but for the most part turbid, and of a yellow colour, with more or less flakes of lymph swimming in it.

The disease arises, in almost every instance, from cold and wet. It will sometimes arise from a local source of irritation; for example, from wounds, from the effusion of substances into the pleura, or from

ulceration of the part; but by far the most common cause, is the application of cold. The treatment I need not dwell upon. It is nothing more than that for any common inflammation. Bleeding, mercurializing, starving, and purging, will cure it, just as easily as any other inflammation.

When effusion takes place, you may always ascertain it to a certainty. Sometimes the patient loses his pain, and may even say he is a great deal better; but notwithstanding that, if you listen to the chest, you may ascertain that he is in considerable danger. Indeed, in such cases, you may be satisfied, from the quickness of the respiration, or the difficulty of it, that all is not going on well; notwithstanding that the patient declares himself better. But if, in every case of pleuritis, you make a point of examining the chest by the ear, you will ascertain to a nicety when effusion takes place, and to what extent it has occurred. In cases unattended by danger altogether, you will observe this effusion; although a person who does not use his ear, would not know that it existed. When effusion is present, there is a dull sound on percussion, and a want of respiratory murmur; and, besides that, if the effusion be inconsiderable, you have in most cases a very peculiar phenomenon; which is, that when the patient speaks, the noise resembles that of Punch. It is a sort of nasal twang. You would fancy there was a showman near, speaking for Punch. It is a sort of cracked sound; and is sometimes silvery and vibrating. This is heard much better, in general, at the *back* of the chest than at the *front*; and as long as this exists, you may be sure the effusion is not very considerable. When it becomes considerable, you have not only a complete dull sound on percussion, and a want of respiration; but you do not hear the voice at all in the part;—the echoing of the voice through the tube, is not to be heard at all. If the effusion should fortunately decline, then, as it does so, yon will hear this peculiar sound again. It is something like the bleating of a goat; and is called *ægophonism* (from *φωνη, sound* or *voice*; and *αιξ, a goat*);—the sound of a goat. I think when you have once heard this sound, you can never mistake it again. It is a sound which but few persons have heard; because, in general, people do not listen to the chest in this disease; and when it it is heard, it is only in a *moderate*, not in *great* effusion. The symptoms at large are not severe at the moment it is heard; and therefore those who are not in the habit of using their ears, in this particular disease, do not think it worth while to examine the chest at that period. You will hear it much the best by applying the stethoscope firmly to the chest; and then putting your ear but lightly to the stethoscope. You do not hear the voice run through the tube, as in pectoriloquy. It does not, by any means, take place to the same degree. It rarely, indeed, enters the tube at all; and much less does it seem to pass *through* the tube. There is no difficulty in learning these signs. You have only to hear them once; and you will remember them again. Laennec says he noticed it in every case of pleuritis that he examined, for five years preceding the

publication of his second edition. Where the effusion is very moderate indeed, then it is not sufficient to produce the sound; and if it be excessive, the phenomenon cannot take place at all. Laennec says he has observed it, where there did not exist in the chest above three or four ounces of fluid. It will occur, not merely when there is *serum* effused in the pleura; but also when the serous membrane pours forth *pus*; as you know that it sometimes will. Altogether it is a variable symptom; because it can only occur when the effusion is moderate.

This phenomenon is explained, by Laennec, to be owing to the compression of the bronchial tubes by fluid, conjointly with the transmission of the sound of the voice through a thin *layer* of fluid. If the layer be very thin, it is not sufficient; for the sound must pass through a certain body of fluid; and, indeed, a very thin layer of fluid would not be sufficient to compress the bronchial tubes. It must reach a certain amount, both in order to compress the bronchial tubes, and to be the medium of this sound; for if there be great effusion, the bronchial tubes are so compressed, that there is but little air in them; and then the sound cannot be heard. Whether Laennec's explanation is correct, I will not pretend to say.

If you change the level of the fluid, you will change the seat of the œgophonism. If the patient be upright, it will be of course over the highest portion of fluid; but if the patient be lying down, then you will hear it where the layer of fluid is the thinnest. If the patient lie down, you will not hear it where there is a great collection; but at a higher point, where the layer of fluid is thinner.

Pleuritis is sometimes a *chronic* affection; and here it is that this particular sign of œgophonism is essentially serviceable. When pleuritis occurs in a chronic form, it is every day mistaken for phthisis. I have seen instances of this over and over again. Sometimes the *acute* form of the disease degenerates into the *chronic*; but more frequently the latter is a very insidious affection; and creeps upon the patient slowly. The general symptoms so much resemble consumption, that the patient is supposed to have gradually fallen into that affection; for this chronic form of the disease is frequently attended by no pain, or only by *obscure* pain; and yet the patient has pyrexia, cough, and expectoration. He will become hectic, and waste away; the pulse will be constantly quick, and he will die. On opening the body, a large quantity of pus will be found in the pleura; while the lungs themselves, perhaps, are entirely sound. Frequently, it must be allowed, in this chronic pleuritis, the lungs labour under phthisis. Very frequently, when chronic pleuritis exists, tubercles exist in the lungs at the same time; but frequently they do not; and at any rate if they do, it is very common for the pleuritis to have been the sole cause of death;—none of the tubercles having proceeded to ulceration.

In this chronic form of pleuritis, adhesions are not formed to any great amount. In the *acute* form, the effusion leaves adhesions. Sometimes you find the whole side adherent;—the pleura *pulmonalis*

to the pleura *costalis*; but in this *chronic* form the collection is often altogether, or the greatest part of it, pus; and any adhesions that form, are frequently slight portions of lymph that are effused. They are so soft, that they are not capable of becoming organized; but as they are mixed with serum, you find after death, that the two substances are united; or, at least, that the one is mingled with the other. This fluid,—this turbid serum, or *puriform* serum, or this absolute pus, augments daily, till the lungs are compressed towards the spine, and towards the mediastinum; and sometimes they are so reduced, that a careless examiner has said that they have disappeared altogether. Just as careless examiners, in former days, said that in hydrocephalus the brain was destroyed, and that a person had been living for months without a brain; so the lungs have been compressed to such a degree, in this disease, that their existence has been altogether passed over.

Sometimes the affected side of the chest grows large; and if it be the left side in which the disease resides, the heart is pushed to the right; so that it beats on the *right*, instead of the *left* side. The disease is then called *empyema*, if the fluid be pus; but it makes no difference whether it be pus or serum. In these circumstances, the ear may not be necessary in order to recognize the disease; for you may see the side increased in size. It appears, to the eye, to be larger than the other; and on measuring it, you find one side of the chest half an inch, perhaps, or an inch, larger than the other. Sometimes you can discover fluctuation,—just as in other instances of a collection of pus; but now and then there is no enlargement of the chest, and no fluctuation to be felt.

In these cases, the want of sound on percussion, and perhaps the presence of œgophonism, will shew the nature of the disease; but the want of all hollow sound on percussion, together with the history of the case, will, in general, sufficiently shew it, without the occurrence of œgophonism. Œgophonism certainly does now and then occur; but still it is to be remembered, that if the fluid fill up the side of the chest, or nearly so, you cannot expect this phenomenon. It is only in a *moderate* collection that you will have this sign; and therefore a person may have the pleura full of pus without it; but if you have attended the patient from the beginning of the complaint, and from the beginning have been in the habit of noticing all the symptoms to be learned by the ear, in conjunction with the general symptoms, you will easily find that œgophonism has appeared and disappeared; and you know it has disappeared not from an *absorption* of the fluid, but from an *augmentation* of it, from this circumstance;—that percussion of the chest gave a dull sound, just in proportion as the œgophonism declined.

In this particular form of the disease, the making of a correct diagnosis is very important; because you may render a patient essential relief. You may save life; and in those cases in which you cannot *save* it, you may *protract* it. It was only two years ago, that I had a case of this description, in a young child almost at the breast.

The heart was pushed so much to the right side, that it was pulsatign there; and the nature of the case being perfectly clear, a lancet was plunged into the left side of the chest two or three times; and the child fortunately recovered, and is alive now. An operation is always safe in these cases. If the collection should point at a particular part, that is the spot at which you should make the opening; but if it do not point, then you should puncture between the eleventh and twelfth ribs. If you be in any doubt about the case, I should advise you to use a needle which has been invented by Dr. Davis. He has had a large needle made with a groove; which needle you may put into the side without any danger. When it is plunged in, if fluid exist, you will see it form a drop near the end of the needle. Whether there be water present or pus, it will escape to a certain extent; and if a drop of fluid come, you will be sure of the nature of the case. A small trochar may then be passed in; and you may thus draw off the fluid. It will be right not to draw off much at a time;—to draw off what only you consider to be a third or a half of what is there,—according to the size and age of the patient; and you may continue to draw it off at different times, till the chest is completely emptied. It has been the custom of Dr. Davis, I know, to pass in a piece of hollow bougie; and to let it remain there. The end of the bougie must be bent down, and fastened by straps of adhesive plaister; so that it may not find its way into the chest. Something must be put into the end of the bougie, to prevent the fluid from escaping too suddenly. The plug may be taken out every day, and a little fluid allowed to escape. Where the lungs are sound, this treatment has been successful. I have not seen many cases of this description; but Dr. Davis, of the London Hospital, has had several; and now he can count up a considerable number, where life has been saved entirely by this method.

When effusion takes place, there is a dead sound on percussion; and no respiratory murmur is heard. This is the natural result of the part being no longer filled with air, but with pus; which has driven the lung aside or upwards, and compressed it below. When a lung has become solid from air, you have this same auricular phenomenon. If the lung become solid from inflammation,—if the substance be converted into something like liver, so far as the solidity is concerned,—you must have a dead sound on percussion, just as if fluid were there. No more air exists in the lung when it has become solid, than when fluid abounds in the chest; and in these circumstances you have equally no respiratory murmur; because the lung being solid, it is unfit for its functions. But when a lung thus becomes solid from inflammation, it becomes so solid throughout, that there is no respiratory murmur at the *root* of the lung; for that part is equally inflamed with the rest; whereas when the dull sound of the chest, and the want of respiratory murmur, arise from a collection of fluid, it rarely so compresses the lung, but that you may hear respiration at the posterior part; that is to say, along the sides of the spine, about three fingers breadth from the vertebral column. Respiration

also continues there when fluid is collected. However great the effusion may be,—even if the lungs be so compressed as to be found with difficulty after death,—not presenting themselves at first,—still I believe that the respiratory murmur is heard at the back and root of the lungs, in the situation I have just stated. This murmur, too, is heard before the effusion is very considerable; and it is heard for a length of time under the clavicle, at the highest part of the chest. The collection of fluid does not mount so high, but that, for a considerable time, you may hear the murmur immediately under the clavicle. When the want of a hollow sound on percussion, and the want of the respiratory murmur, arise from the lung becoming solidified through inflammation, you may very rapidly cease to hear the respiratory sound under the clavicle. The inflammation may be so quick in its operation, and solidify the lungs so soon, that you may hear no respiratory murmur on either side of the spine; because all parts of the lungs may be inflamed. But when the want of a hollow sound on percussion, and the want of a respiratory murmur, arise from effusion compressing the lung, it is a long time before they are lost at the upper part of the chest, under the clavicle; and at the very last, I believe you will always hear the respiratory murmur at the back; about three fingers' breadth on each side of the spine.

The part of the chest where you should first listen for that peculiar phenomenon of the voice called *ægophonism*, is from about one to three fingers' breadth from the lower angle of the scapula, towards the nipple. The reason why you most frequently hear ægophonism between the lower angle of the scapula and the nipple is, that it is below this part that the fluid generally accumulates; and if the whole lung be covered with effusion, still the thickness of the body of the fluid is always less at the posterior part. You can hear this phenomenon here, when you can hear it nowhere else; because the fluid cannot accumulate so extensively in this situation, as in other parts. After the phenomenon has declined in the *front* of the chest, from the great accumulation of fluid, you will still hear it at the *back*, in the particular part I have indicated.

In mentioning to you that the accumulation of fluid in the left pleura, sometimes pushes aside the heart,—so as to produce the extraordinary phenomenon of the heart beating on the right side,—I might have stated that before auscultation was known, though after percussion had been introduced to the medical world, and treated with neglect in this country, I saw a case that puzzled me completely. It is many years ago; and I should not be so puzzled now. In a case of this disease, the liver was so pushed down, that it was felt below the navel; and I being young in practice (though, however young a practitioner might be now, he could not make such a mistake) had no idea of the nature of the disease; but supposed that the man had an enormously enlarged liver; and so did every body else that saw him. The man had a very enlarged abdomen; and the liver could be felt as low as I have stated; but, after death, that organ was found perfectly healthy; but, like the

heart, in other cases, it was not in its "right place." A vast accumulation had taken place in the right pleura; which actually pushed down the diaphragm, and the liver along with it; so that the case was completely misunderstood. If auscultation had been then devised,—if all the phenomena had been known *then* that are known *now*, the matter would have been very clear. We should have ascertained that there was no enlargement of the liver, from this circumstance;—that there must have been a dull sound on percussion, all up the right side of the chest; and, on listening for respiration on the right side, there would have been none heard. It would have been perfectly clear, that the right side of the chest was occupied with something else instead of air; and if the case had been observed throughout, of course there would first have been noticed œgophonism,—the bleating sound; and afterwards it would have disappeared; so that no mistake could have been made. An operation might have been performed, and the man might have recovered; but, as it was, he died. There was a large collection of liquid in the right side of the chest; and every one was quite surprised to find it there. I was not at the inspection; but such was the result. An accumulation in the right side of the chest, therefore, may push down the liver in an extraordinary manner; just as accumulation in the *left* side, may push aside the heart. By the careful use of the ear, the nature of the case (as I have already observed) might have been fully cleared up; and, even now, cases of cheonic pleuritis are every day mistaken for phthisis.

In this chronic form of the disease, as the accumulation takes place slowly, respiration is not so difficult as you might imagine. The other side of the chest gradually does more and more duty; and the patient feels the inconvenience increase so gradually, that it is not such a source of distress to him as you would imagine. In *acute* pleuritis, when the effusion is very considerable, respiration is necessarily rapid; and there you have infinitely more difficulty of breathing, than if the same quantity of fluid were effused in a *chronic* form. This is nothing more than an instance of a general fact;—that when anything peculiar comes on slowly, and is increased moderately, it is not productive of half the excitement, that it would be if it came on quickly.

When the fluid has thus compressed the lung, although nature may cause its absorption, or although a medical man may occasion its escape by an operation, it is possible that the lungs may never expand again; and this want of expansion may occur, either from the great compression they have undergone, or from the production of such firm adhesions, that they are effectually bound down. Inflammation may not only have induced the accumulation of fluid, but may have produced such an effusion of fibrin, as to form firm bands, binding down the lungs; and, from either of these circumstances, the lung may never recover its elasticity. Laennec declares that, on inspection, he has uniformly found these firm adhesions; and he calls them *fibro-cartilaginous*;—not *fibrous*, as we generally see adhesions;

but *fibro-cartilaginous*. However, as the lungs have been known to expand again in some degree; and as the chest, which was sunk in, in consequence of the compression of the lungs, has in some degree recovered its form,—we can hardly suppose that the lungs, in every case, are prevented from expanding, merely by adhesions. Of course, if the lungs will not expand, the chest will become flattened on the sides, from the pressure of the air; but it has been known that the chest, after it has become flattened, has enlarged again, —from the lungs having recovered their powers; and if the want of expansion in the lungs, for a great length of time, arose from fibro-cartilaginous bands, it is not likely that they would ever have yielded so as to allow of the expansion of the lungs again. The extreme compression of the lungs, seems to me to be quite a sufficient cause for the want of their subsequent expansion, without having recourse to the supposition that, in every case where they do not expand again, there must be firm adhesions. The whole lungs are so compressed,—so squeezed together, and become so fixed, that they resemble muscles;—muscles with fibres too minute for detection. You would think they were muscles with exceedingly fine fibres; and I may mention, that when the lungs are so compressed, the colour is either red or grey.

If the lung has been so compressed that it will not expand, and the fluid has been absorbed or let out, and no more has formed, the ribs on that side fall, and lie closer together than they should do. The shoulder, on that side, falls below the other; and the muscles (especially the pectoral) waste,—both as to breadth, and as to length. The muscles waste in proportion as the side becomes contracted; and they are found, on actual measurement after death, to be diminished; and still more do they appear to the *eye* to be diminished. Even the spinal column at length inclines, in some cases, to the opposite side. Most practitioners must have seen instances of persons, with their ribs lying close together on one side; with the shoulder depressed, and the spinal column bent to the other side. The nature of such cases, however, was not understood, nor were the general phenomena of the case itself well described, before the appearance of the first edition of Laennec's celebrated work. I recollect, very well, having had an individual pointed out to me, as a decided proof of the power of muriate of lime in scrofula and phthisis. After suffering very long from pectoral complaints, and being put under the long exhibition of muriate of lime, the man recovered his health; but one side of the chest was manifestly smaller than the other; and he was shewn to every body as a man who had long had phthisis, and had wasted away; but all the ulcers had healed up, owing to the power of muriate of lime. It was considered that the lung had wasted away from ulceration; and the contraction of the side of the chest, was thought a sufficient proof of it; because he had continually expectorated from irritation of the bronchia; and it was also thought that the ulcers had been completely healed, by means of the medicine. I supposed, not knowing better,—for

nobody knew better in those days,—that this was actually the *case*; and therefore did not attempt to deny it. There is no doubt, however, that this was not a case of phthisis at all; but that it was a case of chronic pleuritis, in which great effusion had taken place; which effusion had afterwards been completely absorbed, by the power of nature; and the lung had never been able to recover itself from its compressed condition. You will see, in Laennec's work, a drawing of an individual, with one side of the trunk lower than the other;—through the falling in of the chest, in the manner I have now described.

Laennec considers, that when a case of this description is well marked, it arises from that form of pleuritis, which is attended by hæmorrhage into the pleural cavity. It so happens, that when the pleura is inflamed, an effusion sometimes takes place into it;—just as occasionally occurs from mucous and serous membranes. I mentioned, when speaking of hæmorrhage, that these membranes will produce an effusion of blood; *why*, we cannot tell; but sometimes it is the case. This sometimes happens in the case of the pleura. Blood is effused; and Laennec considers it is in such instances, that this extreme compression takes place. There is, however, no proof that it *always* results from hæmorrhagic pleuritis. Sometimes it arises from that source; but sometimes I am satisfied, there is no hæmorrhage in pleuritis. On the contrary, when the fluid has been let out, it has been proved to be mere pus, without any admixture of blood; and yet contraction of the chest has occurred;—just as where blood has been let out in conjunction with the pus. If it occur more frequently (as Laennec says) after hæmorrhagic pleuritis, and these dense fibrocartilaginous bands, formed by a cohesion of the fibrin in the effused blood upon the costal pleura, were always discovered in contraction of the chest, still I should not regard the thickness of these bands of fibrin, as the *cause* of the contraction; but as *effects*, no less than the contraction itself, of the inability of the compressed lung to expand again.

Bloody fluid, just like pus, is not so rapidly absorbed as mere serum. When blood is effused, the lung is irrecoverably compressed, by the duration of the pressure; and from the slow manner in which the elasticity of the chest, and the pressure of the atmosphere,—resisted as they are by the natural structure of the chest,—can bring down the side to the flattened lung, a space probably exists, greater or smaller, for some time. Laennec, indeed, seems to contradict himself; for he says he is of opinion, that contraction of the chest may be found, in an equal degree, after the disease has produced merely cellular adhesions; so that, in some parts of his work, he seems to give up the opinion, that the inability of the lungs to recover always arises from these firm fibrous cartilaginous bands. He also allows, in another part of his work, that the contraction is owing, not to the adhesions themselves, but to their slow formation. The more slowly these are formed, the less chance will the lung have of expanding. He says that if the effusion be copious, and conse-

quently the resolution of the pleuritis slow, the contraction is evident long before the complete absorption of the fluid; but he says, that the more rapid the absorption, the less chance is there of contraction; sincethe longer the lung is compressed, the greater is the loss of its natural elasticity. In short, Laennec himself does allow, that the degree of the continuance of the compression through the effusion, is the cause of the inability of the lung to recover itself. I myself have frequently opened persons, in whom the lung has never recovered itself; and yet there have been no fibro-cartilaginous bands, and bloody fluid; so that the long continuance of the compression, appeared sufficient to explain the inability of the lung ever to recover itself.

When the chest contracts, in chronic pluritis, the diminution may begin at an early period of the effusion; but may not be perceptible for months. Of course it can only be a certain degree of contraction of the chest that is observable; and those persons who are not in the habit of examing patients with the eye and with the hand,—who consider those as mechanical means, fit only for the surgeon;—those who are not in the habit of making patients undress, and are not accustomed to handle them, except to feel the pulse;—such persons will, of course, be ignorant, for a great length of time, of contraction of the chest. It may be going on for a considerable period; and they may know nothing at all about it, till the patient makes the discovery, and announces it to his medical attendant. When the chest is contracted,—when fluid no longer exists, but the lung is compressed, and the thorax goes down upon it,—then there is a dull sound upon percussion, just as when pleuritis existed; and sometimes you have not only a *dull* sound, but a true *fleshy* sound;—the same sound as if you struck the shoulder or the thigh. But notwithstanding you have this dull sound, the respiratory murmur is heard a little. Probably at the lower part of the chest, where the effusion had taken place first, and must have ceased the last,—for of course it is to the lower part of the chest that the fluid will gravitate at first as well as at last,—there will be no respiratory murmur; but it may be heard faintly at the upper part.

When the inflammation has ceased, and the effusion to which the inflammatory state gave rise has ceased, the walls of the chest are flattened down proportionately to the contracted dimensions of the lung; and nature has effected a cure, exactly in the same way that a surgeon effects a cure of hydrocele;—by adhesion. In the case of a hydrocelė, there is a serous membrane; and when it is inflamed by an injection, fibrin is poured forth, and also serum. The serum is at last absorbed, but the fibrin blocks up the cavity altogether; and that is exactly the state of the parts in the cavity of the chest. When nature has effected a cure, in the way that I have now described, the person is more or less deformed for life; but suffers little inconvenience. The general health may be excellent. Laennec mentions the case of a distinguished surgeon at Paris, whose chest was contracted ofter pluritis, which took place in youth; and in whom percussion, when Laennec wrote, gave a dull sound at the lower

and lateral parts of the effected side of the chest; and the respiratory mnrmur was weaker there, than on the opposite side; but this surgeon had a strong voice; and contrived to lecture once, or even twice a-day, for an hour at a time, without any inconvenience.

Besides the surgical treatment of such a case,—letting out the fluid,—it is necessary to support the strength, and to lessen the irritation by means of opiates,—to use the same constitutional means that you would employ, in the cuse of a large abscess.

HYDROTHORAX.

It sometimes happens that an effusion of fluid takes place into the pleura, without much inflammation. A quantity of serum is effused there; sometimes quite clear; sometimes more or less turbid, and of various characters; but it is not pus, nor is it the result of inflammation. This is commonly called *hydrothorax* (from *ὑδωρ, water*; and *θωραξ, the chest*). You will recollect that, when I spoke of dropsical effusion, I mentioned that effusions in a serous membrane were sometimes puriform, sometimes purulent, sometimes bloody, and so on; and I mentioned that sometimes they arise from *violent* inflammation, somtiemes from *moderate* inflammation, and sometimes, apparently, without any inflammation at all. These were general observations. Now the pleura is in the same predicament as all other serous membranes. It is frequently in the state I have now mentioned from inflammation; but sometimes it contains a quantity of thin fluid, where there was scarcely any inflammation at all,—where there was no necessity to employ antiplogistic means; and sometimes it contains a large quantity of serum, without our being aware (not only during life, but likewise after death) that inflammation has occurred;—in fact, without the least sign of inflammation. Effusion may take place in the pleura, as in other parts, without any signs;—just as a person may sweat, and pour forth fluid, without any inflammation whatever.

A genuine idiopathic case of hydrothorax (water in the pleura) is a very rare thing. You will hear some people who never examine the chest during life, but who open bodies after death, speak of hydrothorax as the most common thing in the world; but when it does not arise from inflammation, hydrothorax is a rare disease. When there is any other disease in the chest, it is common for effusion to take place; but for it to take place, except as a consequence of inflammation, or some organic disease in the chest, is very rare. I do not recollect half a dozen such instances.

When hydrothorax occurs, whether it is the result of a very slight kind of inflammation, or is produced by bronchitis, or peripneumonia, or disease of the heart, or any other disease, the symptoms discoverable by the ear, are just the same as those that occur when the fluid is puriform or purulent, and the result of decided inflammation. You have, of course, a dull sound on percussion, from the presence of fluid; and there is no respiratory murmur at the lower part, although you may still have it at the *upper* part, (unless the

chest be completely filled), below the clavicles; and you have it on each side of the spine, where the fluid does not compress the roots of the lungs.

The general symptoms are difficulty of breathing, deficiency of urine, swelling of the legs, cough, and a sudden starting from sleep; but all these things, when they do occur with a certain degree of effusion into the chest, are more frequently the result of other diseases in the chest than of hydrohorax. In almost every case of hydrothorax you open, you find other disease sufficient to explain the symptoms. In most cases you find disease of the heart, or chronic disease of the lungs; and in those affections you have exactly the same symptoms; although there be not the same quantity of fluid effused into the pleura. I have frequently opened patients, who have been supposed to have died of hydrothorax; whereas death arose from disease of the heart. You will find cases set down as hydrothorax;—where the legs are swelled; where the breathing so difficult that the patient is unable to lie down; where he has orthopnœa and deficiency of urine; and where there is a collection of symptoms which are pronounced to be hydrothorax; whereas, if you listen to the chest, you hear respiration all over it; and if you strike the chest, you hear the usual sound; but on listening to the heart, you hear disease of that organ; or on listening over the chest, you find sonorous and sibilous rattles;—shewing that there are other diseases present. The fluid that occurs in the chest, when it is not puriform, is usually the result of some other disease in the chest. In cases of effusion into the chest, in all circumstances, you have the same auscultatory phenomena;—not only the want of a respiratory murmur;—not only the want of a hollow sound on percussion; but, if the fluid be not considerable, you have also œgophonism. No matter what the disease is, the phenomena are the same.

If you can ascertain that there is really hydrothorax, to an amount sufficient to explain the symptoms;—that there is a dull sound all over the chest on percussion; that the respiratory murmur is not heard any where except just below the clavicle, and at the root of the lungs; and if you see the general signs of dropsy, and the absence of disease of the heart;—you then may presume that the extreme difficnlty of breathing, the swelling of the legs, and the scantiness of the urine, arise from a collection of fluid in the chest;—especially if you hear œgophonism; and if you observe that the dulness of sound, and want of respiratory murmur increase,—reaching higher and higher. In such a case you ought to let out the fluid. Exactly as in other cases, where the presence of a collection is doubtful, you may use the needle which I spoke of, to ascertain whether fluid exists or not. It would be well to do it in every case; because it gives no pain to the patient, and is perfectly safe.

But before these measures are taken, it would be right to give the common remedies for dropsy, where there is no inflammation;—to give diuretics. Digitalis answers an excellent purpose, and also squills; more especially if united with a small quantity of mercury,

which appears to increase the diuretic effect. You may do a great deal of good by these remedies, in all cases of chronic difficulty of breathing,—whether there is effusion of serum or not; because there is continually a great collection in the air-cells, and perhaps also in the cellular membrane of the lung, which impedes respiration. When there is not hydrothorax, properly speaking, you continually find that diuretics are very useful, by causing an absorption of the fluid which is pressing the cellular membrane of the lungs, or filling the air-cells themselves. I mentioned, when speaking of dropsy before, that diuretics answer more purposes than one.

PNEUMATO-THORAX.

The pleura is sometimes distended by air. This disease is called, by Laennec, "*pneumo*-thorax;" but very improperly so. It ought to be called "*pneumato*-thorax;" for "*pneumo*-thorax" means something about *lung* and chest; but "*pneumato*-thorax" means something about *air* and chest. We have such a word as "*pneumatocele*;"—signifying a swelling produced by air; and when air exists in the thorax, we ought to say "*pneumato-thorax*;" because πνευμα is the Greek for "*air*;" and, according to common analogy, we ought to change the genitive into το. We say "*hæmatocele*," and not *hæmocele*. Laennec, therefore, is wrong in the name which he has given to the disease; which consists of air being present in the pleura. This, however, is unimportant; and one is not disposed to dwell upon words; only when a new term is invented, it is right to make it legitimate according to other words. With words that have been long established, we must be contented, and not be over nice.*

When air exists in the pleura, it of course gives rise to the same effects of distention, that the existence of pus or serum does. The intercostal muscles swell out a little; and the diaphragm and liver, in the case of the right side, are pushed down. You may predict what will be the signs to the ear. There will not be a *dead* sound, as in the case of the effusion of pus or serum; but on striking the chest, you will have a *hollow* sound; though on listening to the chest you will, as in hydrothorax, have no respiratory murmur. The air that is inclosed is not the air of respiration; but exists externally to the lungs; and therefore it does not give any respiratory murmur; but there is this great difference;—that if you strike the chest, notwithstanding there is no more respiratory murmur than in the abdomen, yet you have a fine clear hollow sound. You see, in this

* The following additional observations on this subject, are taken from a note at page 5 of Dr. Elliotson's work on Diseases of the Heart:—"The name '*pneumo*-thorax,' adopted from Itard by Laennec, is evidently improper. It should be '*pneumato*-thorax.' Such compound words are always made from the dative singular;—the final letter being changed into *o*, if it be any other vowel. We thus have '*utero*-gestation,' '*cerebro*-spinal,' '*hæmato*-cele.' The genitive and dative of αἷμα, are αἵματος, αἵματι. The genitive and dative of πνεῦμα, are πνευμάτος, πνευμάτι; and the compound word should be '*pneumato*-thorax.' In truth, we already have 'pneumatomphalos,' to signify a flatulent umbilical hernia; and, what is still closer, we have 'pneumato-*cele*.'"

instance, the importance of not trusting either to percussion or to the stethoscope separately. You see that a case may occur, in which the combined use of percussion and auscultation is necessary. If you merely *strike* the chest, in these instances, you find nothing the matter; for it gives a fine hollow sound;—perhaps a clearer sound than in health. Again, if you only *listen* to the chest, without striking—if you merely apply the stethoscope, you will say, "Here is a lung solidified;" or,—"Here is a pleura filled with liquid,—with pus, or with serum." But by using both, you see clearly the nature of the case. You ascertain, by the fine hollow sound, that air is there; but by the want of respiratory murmur, you perceive that the air has nothing to do with the lungs.

You will recollect, that when I spoke of a collection of liquid in the pleura, I mentioned that, however large the collection might be, you would still hear respiration about three fingers' breadth from such side of the spine;—that the roots of the lungs were never so compressed, but that you might hear respiration there; although, in extreme inflammation of the lung, the lung becomes so solid, that no respiration can be heard. Now it is exactly the same when the pleura becomes distended with air. When the lung is compressed by air in the pleura, still the compression is never so great, that respiration cannot be heard at the roots of the lungs;—at least, it must be an extremely rare occurrence. The lung still resists sufficiently to maintain its function at the roots; and consequently, at the sides of the spine, you may hear the respiratory murmur.

There is one case in which the auscultatory phenomena resemble those which are noticed in pneumato-thorax; and that is one that I have already mentioned, under the head of chronic bronchitis. It is when the air-cells are greatly distended, and perhaps broken one into another. When the disease improperly called "emphysema of the lungs" takes place, there is a great cavity in the lungs, filled with air. I say "improperly" so called; because "emphysema" is the existence of air in the cellular membrane; and in this case it is contained in the air-cells of the lungs. You will recollect I mentioned, that there is a very clear sound on percussion; but that on listening to the respiratory murmur, you scarcely hear any thing. The cases, you perceive, are very similar in their nature; that is, cases where air exists in the pleura; and cases where some of the air-cells are very much enlarged, and partly broken down; so that a body of air exists in the substance of the lungs, and is nearly stagnant;—does not pass and repass as it ought to do in respiration. There is, however, a mode of distinguishing between the two cases; and it is this. When air exists in the pleura, you hear no respiratory murmur at all at the front of the chest;—it is stagnant; but in the case of dilatation of the air-cells, the air, although *nearly* stagnant, is never *quite* so;—it is partially expired and inspired; and therefore you do hear a faint respiratory murmur. Another mode of making the diagnosis is this. When the case is one of dilatation of the air-cells, it is consequent upon a long-continued catarrh, or

bronchitic affection. It only takes place, when a disease has existed a long time; and you hear the mucous, sonorous, and sibilious rattles of bronchitis; so that you may very clearly altogether make out the nature of the case; whereas when air exists in the pleura, it is, for the most part, a very sudden affection. There are no signs of bronchitis; and it is not only sudden, but generally very violent; and usually confines the patient to his bed.

HYDRO-PNEUMATO-THORAX.

A compound case sometimes happens;—one made up of the two affections of which I have last spoken;—of "*hydro*-thorax," or empyema, from the fluid existing in the pleura; and of "*pneumato*-thorax," in which air exists in the pleura. We sometimes see patients with both air and fluid in the cavity of the pleura. This affection is termed *hydro-pneumato-thorax*. It is a long word, but very expressive. It shews you, at once, the nature of the case;—"*hydro*-thorax," the name for *liquid* in the chest; and "*pneumato*-thorax," the name for *air* in the chest. There is nothing puzzling in the name.

If you reflect a moment, you may, as in many other cases of affection of the chest, say before-hand what will be the symptoms of this disease perceptible by the ear. The *air*, of course, must be at the *upper* part of the chest,—unless there be adhesions there; and the *liquid* will be at the *lower*; and therefore, on percussion at the *superior* part, you have a *clearer* sound than natural; but when you strike at the *inferior* part, there is a *dead* sound. The contrast is very great indeed. The sound *above* is *clearer* than usual; whereas the sound *below* is perfectly *dead*. If you listen with the stethoscope, during respiration, to all parts of the side of the chest, you hear no respiratory murmur. The air above, and the liquid below, impede respiration; and therefore there is no respiratory murmur, either in the one situation or the other. But there is this difference between simple *hydro*-thorax, and *pneumato*-thorax;—in the former case there is a *dead* sound from the presence of the *liquid*; while in the latter there is a *clearer* sound than natural, from the presence of the *air*; and in a compound case there is a *dead* sound *below*, and a *clear* sound *above*. Again. You are aware that, if you alter the position of the patient, you alter the situation of these phenomena. If the patient under examination be sitting or standing upright, the symptoms will be what I have stated. But suppose you make him lie down. You will then find that the *hollow* sound, instead of being at the *superior* part of the chest, will be altogether at the *anterior*; and the *dead* sound on percussion will be quite by the *side*;—just as you alter the relative position of the air and the fluid.

There is, however, another circumstance which takes place only in this disease;—as, I think, you might imagine. It is, that if you suddenly shake the patient,—take him by the shoulder and jolt him, you frequently hear fluctuation. You cannot hear fluctuation in emphysema alone; neither can you hear it in hydrothorax; nor is

it audible where only air exists in the chest. It is only perceptible in hydro-pneumato-thorax. You may hear the fluctuation with the naked ear applied to the chest; or by means of the stethoscope. It is well, in all cases of this sort, to put the ear on the patient's chest, and let some one move him rather suddenly ; and then you will hear fluctuation within, and the patient will be aware of it himself. Sometimes the patient has discovered this, before the medical attendant has thought of the nature of the case. You will find in one of the volumes of the "Dublin Transactions," a very remarkable case, which occurred before Laennec's time. The patient did not say, like the woman in Scripture, that he had spent all his substance on physicians; but he had been to all the doctors within his reach; and, moreover, he had been sent to the Continent; but it was all in vain. Nobody knew the nature of his malady; and he discovered it at last himself. He found that when he was sitting up, or jolted himself in any way, he heard fluctuation within his chest. He pointed the attention of his medical attendant to it; and then the latter, for the first time, listened to his chest. This phenomenon is mentioned by Hippocrates, or in some of the works ascribed to him; but, unfortunately, it is there said that it takes place only when pus exists in the chest. This is incorrect. It takes place only when there is both liquid and air in the chest; the reason of which is very evident. Those who attended to what Hippocrates, or the writer of this passage said, endeavoured to verify it by dissections; but they found that the observation was inaccurate, and therefore it dropped to the ground; and medical men neglected to apply the ear to the chest, (although Hippocrates had done so), and stigmatized the plan as mere nonsense. Unfortunately the observation was not sufficiently minute. The sound was ascribed solely to the existence of pus; and so the mistake was made.

There is another symptom (for which you would not be prepared) which exists when there are these compound contents (air and liquid) in the pleura; and that is "*metallic tinkling.*" It is exactly like the sound which, according to Laennec's description, is made by striking a pin against a piece of glass. It is a clear, silvery, ringing sound; —a sort of *metallic* sound, as is implied in the expression "*metallic* tinkling,"—a very melodious sound. It was long after I began to study the auricular symptoms of diseases of the chest, before I heard this; and till I did hear it, I mistook many a one for it. There is a click in some diseases of the chest, which, for a long time, I mistook for it; and which all people will do when they are first studying it. When, however, I once heard the real sound, the difference was so great, that it prevented my running any risk of mistaking it again. You will hear a click, but it is not fine and silvery; while in the real "metallic tinkling," the sound is very much like that which is made by wetting the finger, and rubbing it upon a glass vessel. It is not so loud; but it is a fine, clear, expansive sound.

This sound may be heard, most frequently, by putting your ear to the patient's chest, and then suddenly raising him, or causing him

to be raised upright. It is supposed that a portion of pus then drops from the upper part of the chest, down into the lower part; and thus produces the sound. At any rate, the way I have stated is one of the best modes of hearing it. You may hear it by this means, when you cannot hear it in any other mode; but in one particular case of air existing in the pleura, you will hear it when the patient is speaking, coughing, or even breathing; and that case is where the air has got into the pleura through the lungs. It appears that air, as I shall presently mention, may sometimes be secreted in the pleura; sometimes it is the result of a decomposition of puriform fluid; and sometimes it enters the pleura through a rupture of the surface of the lung. If a communication be established between the lung and the pleura,—whether by the ulceration of a tubercle, by rupture, by gangrene of the surface of the lung, or by a wound,—then you will have this clear silvery sound when the patient is speaking; —perhaps when he is coughing, or when he is breathing. An aperture of this description, most frequently takes place from an abscess of the lung;—from a tubercle bursting; so that both air and pus are effused into the cavity together; and in this case there is always a clear "metallic tinkling." I believe I mentioned that, in a patient whose case I formerly detailed, there was a most beautiful metallic sound. On striking the chest when I first saw him, I found a perfectly dead sound all over the lower part of the chest: and being told that it was a case of consumption, of course I did not know the reason of it. But on listening above, I found no respiratory murmur; and the nature of the case, in my estimation, was then clear. When he spoke, there was a fine, clear, ringing sound all over the chest; and when he coughed, it was exactly the same. After a time, it entirely disappeared; and then, I presume, a small cavity which had existed in the lung,—forming a communication between the lung and the pleura,—had healed. In about a fortnight, there was no ringing sound to be heard; and the patient, after going into the country, was apparently a great deal better. After a time, when I saw him again, there was still no respiration to be heard over nearly the whole of the chest; and there was a dead sound on percussion;— not merely at the *inferior*, but also at the *superior* part of the thorax. There was no more metallic tinkling; and it was clear that what had been filled with *air*, was now filled with a *liquid*. An operation was performed; and a quantity of liquid was let out, day after day, till it amounted to many quarts,—*gallons*, I believe. I forget how much was evacuated; but it was an immense quantity. Unfortunately, however, there was too much disease of another kind for the operation to cure him.

When air exists in the pleura, in consequence of such an opening as I have now described, before the silvery sound is heard, you will occasionally hear a particular sound, from air going in and out of the opening; and it is so much like the sound which you make when blowing air into a bottle, that it has been called "*amphoric buzzing*." I do not recollect ever having heard it.

I just now mentioned, that when the air-cells are dilated, and a cavity in the lungs exists, filled with air, the symptoms in some measure resemble those arising from air existing in the pleura; because the one is a great cavity, and so is the other. Now if it so happen that a great cavity exists in the *lung*, filled half by pus and half by air, the circumstance is very much the same, as when the occurrence takes place in the *pleura*. Just as a cavity in a large dilated air-cell, resembles a cavity in the pleura, and gives rise to nearly the same symptoms, so a large *abscess* in the lung, filled half with air and half with fluid, resembles the pleura when in the same condition; and you will therefore have the same phenomena;—that is to say, "metallic tinkling." If the symptoms take place from a large abscess (containing both air and fluid) existing in the lungs, on raising the patient suddenly, a drop will descend from the upper to the lower part, and cause a silvery sound. But if the case be not very clear, it can be made out from this circumstance;—that, when a cavity exists in the *lungs*, you will have pectoriloquy, or the air going through the tube, as if the person's mouth were at the other end of the stethoscope; whereas, in cases where the *pleura* is affected, as there is no great communication between that and the bronchial tubes, you do not have this phenomenon. Where an abscess in the lung, containing partly air and partly fluid, is large, it will give you a sense of fluctuation, upon suddenly shaking the patient.

With respect to the *cause* of pneumato-thorax, far more frequently than not, it takes place suddenly; and I believe that, more frequently than not, it happens to phthisical patients; in whom, unfortunately, a tubercle has existed close to the surface of the lung; and nature has not formed an adhesion of the surface of the lung to the costal pleura; so that ulceration has gone on to the pulmonary pleura, which has become thin, and at last has ulcerated through. It has frequently happened, that when a patient labouring under phthisis has made a violent effort, rupture has taken place. The general symptoms are extreme dyspnœa; and a person who does not use his ear, might perhaps be led to suppose, that it was merely an attack of inflammation;—especially if the patient had been running out of doors in the evening. One might then suppose, that the patient had caught a violent cold; and he might be bled and blistered all to no purpose;—the nature of the case simply being, that air had escaped into the pleura. The importance of listening to the chest, in such a case, is evident; for you may make out the nature of the case, clearly enough, by striking the chest. You find a perfectly clear sound; and yet, on listening to the respiration, you hear no respiratory murmur.

In such circumstances, an operation should be performed. The parts should be punctured, and the air let out. You will find, in one of the medical journals, an interesting case of this description, which occurred to Dr. James Johnson. It happened to a medical practitioner, who ran to a case of midwifery; and was seized with difficulty of breathing, and the symptoms I have just mentioned.

Several practitioners were called in; one of whom said that he had had a similar case the preceding winter, and that the patient was cured with hyoscyamus; but nobody had the least idea of the true nature of the affection, except Dr. James Johnson; and he was so satisfied respecting it, that Mr. Guthrie, I think, at his request, made an opening into the chest; and out came a rush of air, and the patient felt immediate relief. This was a great object effected; —at least, all those who have been in pain, know what a blessing it is to get half an hour's ease. The patient died afterwards, because he was phthisical; but had there been no other disease than this accidental escape of air, no doubt he would have done well. If the collection of air occur on the left side of the chest, it will push the heart to the right side;—just the same as a collection of *liquid*. Of course the operation would not be required, merely because you hear air in the chest. It need only be performed where there is such difficulty of breathing, as to make it necessary to do something for the relief of the patient. So in a compound case,—one of hydro-pneumato-thorax, where there is both air and water in the chest,— no operation would be required, unless there were extreme dyspnœa. It is best to make the opening large enough to let out the liquid; so that, after the air has escaped, the liquid may also be evacuated.

The general treatment would be that of phthisis, or a large abscess;—supporting the strength, &c. These are rare cases comparatively, but it is very necessary to know them. Every now and then, in practice, you will meet with such a case; and if you know the nature of it, although you may not be able to *cure* the patient, you may yet do him great good. You may lesson his sufferings; and sometimes you may even cure him. When air exists in the pleura from gangrene of the lung at that spot, and the separation of the eschar,—a circumstance which will occur when the gangrene is quite partial,—the operation, in such a case, might be followed by complete success. If air were disengaged merely from a quantity of fœtid pus underneth, it is possible that the operation might be the means of saving the patient's life,—by putting an end to the dyspnœa, which would perhaps have killed him, and then the other disease may be made to subside. Phthisis is rarely cured; but these other affections sometimes are. It may happen, therefore,—unless the patient have phthisis,—that the disease may be permanently cured.

TUBERCULAR DISEASE OF THE PLEURA.

There are certain other diseases of the pleura, of an *organic* nature; upon which I will not dwell long. Occasionally the pleura is attacked by the same disease, which forms phthisis when it exists in the lungs. The pleura is sometimes, though not very frequently, in a state of tubercular deposit. Sometimes, in phthisis, you will see one pleura, or both, beset with tubercles of various sizes;—generally small, but sometimes of a large size.

The deposition of tubercles in the pleura, may be attended with scarcely any symptoms whatever; because phthisis may exist at the

same time, and the symptoms of the *greater* disease, may swallow up those of the *small* one. But sometimes, if the disease exist alone, and is of any considerable amount, there will be all the signs of a pleuritic effusion into the chest;—all those symptoms which I just now mentioned; and it may not be easy to make a diagnosis, in a case of this description. One is continually surprised, on making a post-mortem examination, to find tubercles in the pleura. But if the disease be considerable in any one spot, you will have marks of pleuritis. Inflammation will take place around the tubercle; and suppuration will occur. But it is not easy to distinguish inflammation from such a source as that, from inflammation of a simple nature. When suppuration takes place, pus may be discharged into the pleura; or, without suppuration, there may be an effusion into that cavity from excessive secretion; and the secretion may be either serous or purulent. In fact, you may have pleuritis, and all the *consequences* of pleuritis; so that you may have air pass in, and all those other changes will take place which I mentioned as occurring without tubercles; and the patient will become hectic.

The treatment of the case will depend entirely upon the presence of air, the presence of liquid, the presence of inflammation, and so on. It is only necessary to know, that all the changes which I have now mentioned, are sometimes connected with tubercles in the pleura itself; and that sometimes very minute tubercles will exist there, and give rise to scarcely any symptoms at all. Tubercles are frequently observed there, when they are seen in various other parts of the body. More frequently than not, perhaps, when pleuritis is chronic,—when the patient has a fixed pain of an inflammatory nature, in the pleura, and wastes away, it is a scrofulous affection; and is attended by this tubercular deposition. The tubercles, most probably, are situated in the cellular texture, immediately under the serous membrane.

OSSIFICATION OF THE PLEURA.

I have seen the pleura ossified to a great extent. Here, again, it is not the *pleura*, properly speaking, that is ossified.—at least *originally*; but it is the cellular membrane under it. The cellular membrane is frequently converted into bone, in various parts of the body; or bony deposit takes place in the cellular membrane. Perhaps the latter is a more accurate mode of speaking. But the pleura above the bone will sometimes disappear,—waste away; so that on looking into the cavity of the pleura, you perceive the bare bone. I recollect once meeting with this occurrence, to a great extent, in an old man who died of ascites and liver-disease; and who was not aware that he had disease in the pleura;—at least, he never attracted our attention to it. I recollect remarking how well he could lie down, notwithstanding the fluid in his abdomen. I found the pleura covering several ribs in a state of ossification.

Other affections may occur in this situation. You may have

scirrhus, and melanoid disease; but these are comparatively rare affections.*

PERICARDITIS.

The subjects to which I now pass, will be inflammation and organic diseases of the other serous membrane contained in the chest;— inflammation of the pericardium.

In speaking of inflammation of the pericardium, I will consider that membrane both in its loose portion, and that which is bound closely down to the substance of the heart. I believe some writers call inflammation of that portion of the pericardium which closely invests the heart, *carditis*, as well as inflammation of the heart itself; but as it is all one continuous membrane,—the loose portion and that which is bound down,—and both adhere together, it is more correct to speak of inflammation of *both* portions under the term of "*pericarditis*," than to call *one* "inflammation of the pericardium," and the *other* "carditis."

Formerly this was not supposed to be a common disease; but so far from that opinion being correct, it is an exceedingly common affection. No man in practice can pass a month, without seeing cases of this description. This disease has been thought to be one not very easily made out; and, like all other diseases, I suppose that sometimes it may escape the attention of good practitioners; and that they may have been surprised, after death, to find signs of inflammation within the pericardium.

The symptoms of the disease, are pain in the region of the heart; and that pain is frequently increased upon pressure;—provided you make the pressure between the ribs over the heart, so that it actually influences the pericardium. If you make an exceedingly great pressure upon the ribs themselves, so as to press them down as much as possible, you frequently increase the pain; and you also have an increase of pain, if you push up the ends of the fingers under the cartilages of the ribs, so as to drive the diaphragm against the heart, with the ends of the fingers. Then the pain,—that which is felt at all times, and not that which you occasion merely by pressure,—generally darts up to the left shoulder. It also goes through to the back; and very frequently it extends down the left arm. From these symptoms, and the increased action of the heart, together with the pyrexia which is present, I think any one would be justified in saying there was pericarditis; and if he treat it accordingly, he wil generally find himself treating the patient right.

* We cannot take leave of Diseases of the Lungs, without directing the attention of our readers to "A Treatise on the Diagnosis and Treatment of Diseases of the Chest. By William Stokes, M.D." In this, the most able work we possess on the subject, one of the first stethoscopists of the day has given us the result of great talents and ample opportunities, brought to bear, for a long series of years, on this, his favourite department of medical investigation. The expectations of his friends could not have been higher than they were; and Dr. Stokes has not disappointed them.

The use of the ear in this disease, so far as I have been able to notice, is rather negative than positive. I have not been able, very frequently, to hear any thing unusual about the sounds or action of the heart; except that the heart acts too violently. In these cases there is palpitation; but on listening you will hear nothing more, than that the heart throughout is beating strongly; and perhaps all the sounds are a little increased; but not more than will occur, if you make the heart beat violently from exercise, or from taking any stimulant. Now and then it will happen, that the action of the heart takes place with a blowing sound; but that by no means occurs invariably. Much more frequently than otherwise, there is no such thing; and when it does take place, it generally continues; and the case becomes more or less chronic. It is not a necessary circumstance that it should take place; and it does not deserve, in my opinion, to be considered one of the symptoms in the disease. So frequently is this sound absent,—so frequently will it arise from other causes than pericarditis,—that if the case be one of pure pericarditis, I do not believe this sound will take place. I believe it occurs only when some other affection is present at the same time.

This disease is both acute and chronic;—like most other inflammations; but when it occurs in an acute form, far more frequently than not, it accompanies, or has been preceded by rheumatism; and it is a disease which occurs far more commonly in young persons,—in youths and young adults, than in any others. You will occasionally see it in infants, *in*, or *after* rheumatism; but, generally speaking, it attacks children from twelve to fifteen years of age perhaps; and young adults up to thirty. I do not recollect an instance of its occurring from the *suppression* of rheumatism. In every case that I can recollect, at this moment, it has occurred either *during* an attack of acute rheumatism, or some time *afterwards*; and not when the rheumatism has suddenly disappeared, but when it has gone slowly away; or when there has been some little degree of it still lingering in the body. I have seen rheumatism cease suddenly, without seeing this disease as the consequence of it, and every other practitioner must have seen the same. Far more frequently than not, it occurs as a part of rheumatism; but it does not arise from the sudden cessation of that complaint in the joints. It is a curious circumstance, that sometimes after the rheumatism has ceased for three or four months, when the patient has got rid of his rheumatism entirely, a pain has come on in the side;—and signs of pericarditis, greater or smaller, have taken place. The French say that they consider this as the result of suppressed rheumatism in the joints; but I have never seen it. I have been in the habit of applying cold water to joints affected with rheumatism, when they were hotter than they should be; but I have never seen this result. It will sometimes occur from cold and wet, like any other inflammation; but generally that which will produce it, produces at the same time rheumatism of the joints.

I believe it is entirely an English discovery, that this disease is so

connected with rheumatism. The observation was made cursorily at first. It was merely supposed that disease of the *heart* was connected with rheumatism. For that observation we are indebted to Dr. Pitcairn, of St. Bartholomew's hospital; but he was a diffident man, and could not be persuaded to publish it. Neither Dr. Baillie, nor any one else, could prevail upon him to make it known through the press; but he was the first person who pointed out the fact, that disease of the heart was continually connected with rheumatism. Sir David Dundas, a surgeon at Richmond, subsequently published a paper on the subject, in the first volume of the "Medico-Chirurgical Transactions;" but this was many years after Dr. Baillie stated the fact, in his "Morbid Anatomy;" and ascribed the discovery of it to Dr. Pitcairn. Sir David Dundas, however, never makes an allusion to this; but brings it all forward with an air of novelty, and publishes it as an original discovery.

However, I think it is pretty certain that disease of the *heart* is not connected with rheumatism, except so far as the effect of *pericarditis* is connected with rheumatism. We every day see the latter occurrence; and whenever you see a case of disease of the heart connected with rheumatism in a young person, and the patient dies, you will find marks of preceding inflammation within the pericardium; and if you inquire into the history of the case, you will find that there were originally symptoms of pericarditis. I am quite clear that the rheumatism is connected with the inflammation of the pericardium. I will not say it *produces* it, because all the symptoms result, perhaps, from the same state of the system; but the first thing *connected* with the rheumatism, is pericarditis; and then when that has existed any considerable time, the organic changes of the heart take place. You may easily, I think, satisfy yourself of this, by reading all the cases that have been published of diseases of the heart, as consequent upon rheumatism. You will find strong proofs of inflammation of the pericardium; and if the original history of the case be detailed, you will see strong symptoms of pericarditis. If you attend to this matter, when you inspect the body of a person who has died of the disease, you will find marks of pericarditis; or if you make inquiry of a patient, you will find the symptoms are those indicative of the complaint; and every day, when you see cases at the onset of affection of the heart connected with rheumatism, you will see that inflammation has taken place first, and that organic disease is consequent upon that. This is a very happy circumstance; because inflammation of the pericardium may be controlled, as easily as inflammation of any other part; whereas organic disease of the heart, for the most part, is an affection which we can only palliate. But it is not disease of the *heart* which is connected primarily with rheumatism, but *pericarditis*. This is nothing more than you would suppose; because young persons, who are chiefly the subjects of this disease of the heart, are not subject to organic diseases, except scrofula. They are subject enough to *inflammation*; and we know that inflammation of any part whatever, will leave organic

disease. The great source of organic disease, is inflammation; and it is quite capable of producing every organic affection whatever;—that is to say, of producing all *common*, and all *structural* diseases, and a predisposition to any *peculiar* disease. The debility produced by inflammation of another part, easily makes the patient the prey of a specific affection. But it is in *young* subjects that this affection occurs;—in young subjects who are particularly liable to *inflammation* of every description; and not to *organic* diseases of any kind, except scrofula.

After death from this disease, the anatomical appearances are just the same, as after inflammation of any other serous membrane. There is sometimes redness in stars; and sometimes there are patches of redness. The redness seldom extends very deep, even in the most violent cases. The membrane does not become thickened; but of course a quantity of fibrin is seen lying upon it, and a quantity of serum is collected within the cavity. The fibrin is generally in very fine layers;—it forms layers upon the pericardium; and sometimes it lies in a mass, like jelly. It is usually irregular upon its surface, having minute pores; and sometimes these pores,—these little irregularities, are very considerable; so that Laennec compares their appearance to that of two slabs, which have had butter spread upon them, and have then been forcibly separated. A number of knobs then appear; with, of course, little excavations between them. There is often a great deal of this exudation, when the redness is very considerable.

If these exudations are considerable, they will sometimes glue the two portions of the pericardium together; so that they cohere to the heart; a cavity no longer exists; and hydrops pericardii cannot take place. Such cases have been taken as instances of the entire absence of the pericardium. There are, perhaps, half a dozen cases on record, where no pericardium existed; but there is no question now, that the cases so described are altogether doubtful. They were nothing more than instances of the cohesion of the two portions of the pericardium;—the loose portion, and that which immediately invests the heart; so that a mistake has been committed. You find, in one of these instances, that there had been a complete cohesion; but occasionally the adhesion is partial,—exists here and there. Of course there is a very great variety as to the strength of these adhesions. Sometimes they are very slight, like those in the pleura; and sometimes they are very tough and fleshy;—indeed, almost cartilaginous. With regard to the quantity of fluid which is produced from the inflammation, it is seldom very considerable. Now and then it is; but that is a rare occurrence. For the most part, this fluid presents the same appearance as in other inflamed serous membranes. Sometimes it is turbid, of a yellow colour, and containing a few flakes of lymph; but now and then, as in the case of the pleura, it has the appearance of pus; and even absolute pus has been found in large quantity; and that within the pericardium. Dr. Baillie says, that he once saw a quart of pus in the pericardium; and no ulceration

existed. It was pus secreted by a *serous* membrane;—exactly as you frequently see it secreted by a *mucous* membrane.

As to the *treatment* of the disease, when it is acute there is nothing peculiar in it; and I will not take up your time for a moment in speaking of it. The treatment is the same as that for active inflammation in any other part of the body; only it is to be remembered, that this inflammation is seldom violently active. It is generally moderate inflammation; and disposed to become chronic. When acute inflammation is not very intense, the best way of attempting to remedy it, is by local bleeding; and a very moderate inflammation of the pericardium,—just like a moderate inflammation of the pleura or the peritoneum,—is best treated in that way. I think, in my own practice, I have noticed that pericarditis yields more readily to free *local*, than to *general* bleeding; and I believe this is owing to the general principle that inflammation, when (although acute) it is not very intense, is best remedied by local means.

Inflammation of the pericardium, when acute, is seldom of a very active character;—not so active as pleuritis or peritonitis; and it is disposed to fall into the chronic form. I believe the greater number of persons who have pericarditis, do not die of it immediately; but at a remote period; and then death arises from *acute* inflammation, degenerating into the *chronic* form. This is the principal danger arising from pericarditis. Mercury should be given; rest should be enjoined; and the patient should be restricted to low diet. These are the only observations that I think it necessary to make respecting this affection. Nothing more can be said than what I have advanced, over and over again, respecting the treatment of inflammation in general.

As to the *chronic* form of the disease, the symptoms are precisely the same as when the affection is *acute*; only not so violent. But in the chronic disease there are generally other symptoms, which depend altogether upon structural disease of the heart. Whenever pericarditis has become chronic, there is the greatest probability that more or less organic structural disease of the heart has taken place; and you seldom meet with a case of chronic pericarditis without observing, after death, that the valves are diseased, or that the substance of the heart is so. If those adhesions of which I have spoken take place, there may be great inconvenience, or there may be none at all. I have frequently seen the two portions of the pericardium completely coherent, without any symptoms being produced. Indeed, I never recollect seeing a symptom that was at all referrible to this state; and I do no believe that any inconvenience arises from it; though I have seen great inconvenience arise from *partial* adhesions. The heart appears to act just as well as when it is properly enveloped with the pericardium,—as when it is in a natural state. When symptoms have manifested themselves, there has been sufficient disease of another kind to explain them, without the pericarditis. But a case of a female who had disease of the heart, came before my notice; and it was a singular fact, that whenever she lay on her back, she was in

extreme agony. She was easier even on her left side than on her back. In diseases of the heart, you generally find that patients lie more easily on the *right* side than on the *left*; and the reason is evident;—it is because the heart is very near to the ribs; and when the patient lies on the left side, there is a considerable thump against them. But this woman, although she could lie better on the right side than the left, could lie better on the left than on the back. A pain was experienced about the sternum; and she could not lie in that position. On opening the body, a strong adhesion of the pericardium was found; so that a portion of the heart was suspended; and every time she lay on her back, the heart endeavoured to drag towards the spine; but that being prevented, there was a constant stretching of the parts. I know an instance now, where the patient (a female) appears to have chronic pericarditis; and cannot lie at all on the side, without experiencing a darting, stabbing, pulling sensation on the opposite side. I have no doubt, from the symptoms, that there is an adhesion, in this case, of the side of the heart. I fancied that, in the other case, there was an adhesion in front; and, in my work on Diseases of the Heart, I have given a representation of it.*

You will find, in many books, an account of the signs of adhesion of the pericardium; and almost every day I see patients, who are labouring under various affections of the heart; who have been told that it was an adhesion;—just as people will come with a pain of the side, and have all sorts of fanciful notions, which have been spread abroad by persons who do not dissect cases after death. I am quite satisfied that if medical men would adopt that practice, they would find (as I have) a large number of cases, where there has been com-

* "Recent Improvements in the Art of Distinguishing the various Diseases of the Heart;—being the Lumleyan Lectures, delivered before the Royal College of Physicians, in the year 1829. By John Elliotson, M.D. F.R.S." The representation of the case referred to in the text, occupies the third and fourth Plates; and the following notes are added:—"The patient (a young woman) invariably complained of a dragging smarting pain, at the front of the chest, in the supine position. There was violent impulse of the *left ventricle*, with irregularity in force and frequency; a bellows-sound in the region of the *left auricle*, between the pulses; a bellows-sound in the region of the *right ventricle*, synchronous with the pulse; and a clear sound in the region of the *right auricle*, between the pulses. Dyspnœa and anasarca were present; and the *right auricle* (which is partly seen in Plate IV.) was greatly dilated." In the body of the work (at page 11) the following observations occur in reference to the pain felt in this case:—"I have seen the whole pericardium so coherent, that its cavity was entirely abolished; and yet the symptoms which had been present, were exactly commensurate with the *organic disease of the heart*, which existed at the time; and had certainly no relation to the *adhesion of the pericardium*. I cannot say I ever observed a symptom produced by adhesion of this part, except in *one case*; and there a single thick adhesion extended along the front of the heart. In the supine posture, this must have been dragged down by the subjacent heart; and must have tended to drag the pericardium of the front of the chest with it, and to suspend the heart; so that the parietal and cardiac pericardium, at their points of union with it, must have been put upon the stretch. The patient, accordingly, had been unable to lie on her back; on account of a smarting pain, produced in this posture, at the front of the cardiac region."

plete cohesion; and yet where there was no reason whatever to ascribe any of the symptoms that did occur, to those adhesions. It is evident that when an adhesion of the heart is great, it must impede the heart's action; but even then, I do not believe it will give rise to palpitation. When persons come with nervous or dyspeptic palpitation, they will tell you they have been informed there is an adhesion of the heart, and that nothing can be done for them. The fact is, medical men entertained that opinion, a generation or two ago; but it has since been abandoned. The common people, however, still retain the notion, as they usually do the opinions of their superiors, long after the latter have cast them off.

With regard to *effusion* into the pericardium, it is a very rare thing for that to amount to such a quantity as to produce inconvenience; but still such a circumstance may occur. The mode of discovering this occurrence, would be by finding that, on striking around the region of the heart, there was a dull sound to a very great extent; and yet no signs of disease of the heart itself;—no preternatural sound, as if the valves were diseased;—no unusual thumping of the heart;—no unusual *loudness* of the heart; and, on the other hand, no *diminished* sound of the heart;—nothing occurring perhaps, but a dulness of sound, to a very great extent, about the region of the heart. I never saw such a case; but those are the symptoms which, from the nature of the case, you might predict; and you find them mentioned by Andral, as occurring in the cases which took place in his practice. In all probability, there has sometimes been a swelling of the feet, a deficiency of urine,—the common symptoms of dropsy,—and more or less dyspnœa. When such an occurrence takes place, you may *suspect* the existence of this affection; but I do not know that you can be *sure* of it. You must treat the case according to your suspicions.

If there be no signs of inflammation left, it will be proper to give diuretics vigorously. But we have cases on record where, in these circumstances, the pericardium has been opened. Of course this would be improper, unless a person appeared to be dying. Unless a patient appeared to be dying from a difficulty of breathing, and fluctuation were felt, I do not think that any person would be justified in opening the pericardium,—whatever might be the other symptoms. You will find it said that, when a soft fluctuating tumor has been felt about the region of the heart, the operation has been performed with success; but I can give you no farther information on the subject. I should like a long consultation, before I recommended the pericardium to be opened.

TRANSFORMATION OF THE PERICARDIUM.

The chronic form of pericarditis is frequently followed by the other changes of inflammation;—by the various transformations which I formerly mentioned. Frequently, the cellular membrane under the pericardium is transformed into cartilage; so that you have knobs of cartilage here and there; and sometimes you have the transforma-

tion that I spoke of subsequently to cartilaginous transformations; namely, that of bone. It is common for the sub-serous cellular membrane to become cartilaginous; and sometimes it will proceed farther, and you have bone. I have seen the heart, in some instances, almost encased with bone. When the heart is said to be converted into bone, I imagine the nature of the case to be this; The sub-serous cellular membrane has been ossified; and the muscular substance has wasted away. It is a common thing, in various structures, when one portion becomes very hard, even to the extent of ossification,—it is very common for the other constituents of the structure to waste; and that, I imagine, is the case in instances of "ossification of the heart," as they have been called.

NEW FORMATIONS IN THE PERICARDIUM.

The pericardium is rarely subject to new formations; but sometimes scrofulous deposit takes place in it; sometimes hydatids have been found; and occasionally scirrhus, and the other new formations which I formerly mentioned.

HÆMORRHAGE INTO THE PERICARDIUM.

I believe, when speaking of hæmorrhage, I mentioned that the pericardium is a part where it takes place suddenly, without a rupture of the vessels. You will find, in Dr. Baillie's work, an instance or two of this description. I saw the parts after death, in a case of this kind; and nothing could be discovered as giving rise to this hæmorrhage. The parts were soft, and that was all. I have mentioned the occurrence of cases of this kind in the stomach, intestines, and spinal canal; but it will take place in various parts of the body, without any obvious mechanical reason; and it has sometimes occurred among others, in the pericardium.*

DISEASE OF THE LINING MEMBRANE OF THE HEART.

I shall now proceed to speak of what may be called the membrane corresponding to the pericardium—the membrane within the heart. You know that the heart has a membrane within, as well as a membrane without;—a membrane which is continuous with the lining membrane of the aorta, and of the valves. This is subject to inflammation,—the same as the pericardium is; but there are no signs by which you can ascertain its existence. You may occasionally *suspect* it; but after all, I imagine it will be a mere guess.

After death, however, this lining membrane is certainly found occasionally in a state of inflammation; but you are not to presume, in every instance in which you find redness of this part, that there is inflammation. If it so happen that the parts are all soft, they will become dyed by the blood,—they will imbibe it after death; and the blood which is in the cavity will stain them. Almost always when

* For some additional particulars respecting diseases of the pericardium, see Appendix, No. VII.

you find the heart softened in structure, you will observe it of a deep red colour;—simply as the effect of that imbibition, which I mentioned, when speaking of inflammation in general; and when I pointed out the necessity of being careful, in many instances, not to decide that there was *inflammation*, simply because there was *redness*. In the case of softness of the heart, you will continually find the lining membrane of the valves and other parts intensely red, without there having been inflammation; but there is no doubt that this redness does sometimes result from inflammation. This is proved by finding fibrin effused upon the coloured portion, and adhering to it closely. Another proof is, that you find the part which is so intensely red without a drop of blood in contact with it. You will sometimes find the membrane red in particular valves, for example; and yet the whole cavity will be emptied of blood; so that it cannot be ascribed to the imbibition of blood from the part with which it was lying in contact. Occasionally this redness will arise from great dyspnœa. You are aware that when, before death, there is long-continued difficulty of breathing, the mucous membrane of the stomach, intestines, and bronchia, becomes very red; and the right side of the heart becomes gorged with blood. In these cases you will, in many instances, have redness of the inner membrane. But where a patient has died suddenly, and there has not been time for the gradual accumulation of the blood from the smaller vessels,—where after death no blood is lying in contact with the red part, you sometimes find the lining membrane intensely red.

In cases of this description there has sometimes been before death, great rapidity of the pulse, rapid action of the heart, and more or less uneasiness and smarting in the region of the heart. If this occur within the aorta, for example, there is in general great rapidity of pulse, and a smarting sensation down the spine in the course of the aorta. In the case of the heart, the only reason that you have to suppose its existence is that, in addition to the signs of pericarditis (for pericarditis is generally united with it), there is a very violent action of the heart indeed; but I confess that, more frequently than not, I have found this appearance after death, without having had any reason to suspect it during life.

When the lining membrane is affected with inflammation, it is generally a mere *chronic* disease,—just like inflammation of the pericardium. It undergoes the common changes produced by inflammation; it becomes thicker than it should be; and, at the same time, it becomes harder. The parts of this membrane most frequently affected, are those which form the valves. The valves, you know, are nothing more than an elongation and doubling of this lining membrane. In the case of the tricuspid and mitral valves, a portion of tendinous structure likewise enters into their composition. The chordæ tendiniæ, invested as they are by the lining membrane of the heart, run along into the valves, and are lost there in the lining membrane; so that the mitral and tricuspid valves, are made up of *fibrous* membrane and the *lining* membrane;—tendinous and

serous membrane; whereas the semilunar valves of the aorta and pulmonary artery, are nothing more than the lining membrane itself, protruded and extended.

It is a general rule observed in pathology, that the lining membrane at the opening of the heart, is more subject to disease than other parts;—whether it be simple inflammation, or the effects of chronic inflammation in any other part. You know very well, that it is not the stomach at large which is generally diseased; but one of the openings;—the cardiac or the pyloric. You know that, more frequently than not, disease affects the intestines where the small intestines terminate in the large; or, again, where the large terminate in the rectum. The rectum is the great seat of scirrhus, stricture, and various other diseases of structure. In fever ulcerations are more frequently found at the termination of the ileum than elsewhere; and there it is we continually see schirrus and cancer of the intestines. Instances of disease of the cardia and pylorus, are infinitely more frequent than disease of the rest of the stomach. Exactly the same is observed in the case of the heart; so that you have infinitely more cases of disease of the *opening* of the heart, than you have in any other part of the lining membrane. This is nothing more than an exemplification of a general rule.

There is another rule, however, which is peculiar to the heart; namely, that the left side is more subject to diseases of all kinds, and infinitely more to redness, than the right. That is a general rule, with respect both to the lining membrane within the heart, and with respect to the substance of the heart itself. Various hypotheses have been formed to explain this; but the most probable explanation is, that one side of the heart receives blood of an *arterial* character, whereas the other has blood of a *venous* character. It has been thought that one side of the heart does more work than the other; but in proportion it certainly does not. Every time the left ventricle contracts, the right does the same; and so with respect to the auricles; and if the left ventricle have to send its blood farther than the right, yet the structure is much thicker than that of the right; and thus it is fully qualified for the exercise of the duty which it has to perform. No difference that I can discover exists between them; except that one receives *arterial*, and the other *venous* blood. Whether that will explain the circumstance, I do not know; but we know, as a general rule, that arteries are more subject to active diseases of all kinds, than veins; and it is very probable that the greater stimulus of the arterial blood occasions other causes of disease, when applied, to act more energetically; and also causes disease to take place with more readiness.

DISEASES OF THE VALVES OF THE HEART.

Inflammation of the pericardium, therefore, when chronic, is very frequently united with chronic inflammation of the membrane within the heart; and most frequently with chronic inflammation of those parts that form the valves. This is one way in which organic disease

of the heart is produced; namely, by pericarditis. Pericarditis seldom exists long, without being followed by a similar state of the lining membrane within. You know that, in the natural state, these valves are quite flexible; and though not *transparent*, are *translucent*; —they allow light to pass through them, although they will not allow you to see through them;—they are fine, flexible, and translucent. But when they have become chronically inflamed, instead of being light, they become yellow; and instead of being translucent, they become opaque. They lose their flexibility, perhaps; and become more or less rigid. They play less easily; and at last become quite rigid. They lose their fineness, and become thick; and not only thick, but dense. If these changes be not very severe, they give rise to no symptoms at all. If they do not prevent the passage of blood, by narrowing the opening,—if they do not prevent the valve from doing its duty, no symptom (that I am aware of) can arise; so that the best auscultator in the world may find, after death, disease of the valves, of which he had no idea before the patient ceased to live. It is only when function is impeded, that any symptom can arise.

The change which the valves undergo will, at last, amount to cartilaginous hardness. They will become perfectly cartilaginous; and, in a still further degree, they will become complete bone. When they undergo this change of consistency, the aperture of the part is diminished. In the case of the tricuspid valve, the opening may be reduced to one-third or one-fourth. Still, however, it generally retains its circular form. In the case of the corresponding valve on the opposite side,—the mitral valve, the circular form is still in many instances retained; but in other cases the opening grows up in such a way, that it is only a chink. Instead of being circular, it is of a crescent form,—a sort of semilunar chink; and from the valve growing so considerably, a pouch is formed, leading from the auricle to the ventricle; so that when you open the left ventricle you see, as it were, a pouch extending into it; and, at the end of the pouch, there may be a circular opening. Sometimes, instead of a pouch, the valve is all contracted together; and you have nothing more than a chink.

Sometimes the valves will become bony. When there is bone, it is deposited under the membrane;—it is deposited, as in all cases of serous membranes, immediately under it; and then the membrane, from the presence of the bone, becomes exceedingly thin; till at last it will disappear, perhaps, over the bony portion; and the bare bone is then in contact with the blood. It is very rare for the valve to be universally converted to bone, nor is it common for it to be universally converted into cartilage; but the changes exist in different degrees at different spots; so that here and there there will be bone, and sometimes the valves will become completely cartilaginous.

With regard to the valves between the auricles and ventricles on either side,—the *tricuspid* on the *right* side, and the *bicuspid* or *mitral* on the *left*,—when they are much diseased, instead of falling back,

they form a very considerable curtain, with an opening (generally of an oval or circular form) in the centre of it. The different parts of the valve may become filled, or grown up; so that you have a complete membrane between the auricle and the ventricle; and in the case of the *mitral* valve, especially, we every day see it extended in the form of a pouch. The opening in the mitral, as well as in the tricuspid valve, is generally in the centre, and is circular or oval. I before said that the mitral valve is sometimes so grown up, that a mere slit remains; and it is worthy of notice that this slit is not straight, but is generally of a crescent form,—in the shape of a bent finger;—the concavity of the opening usually being towards the root of the aorta, and the convexity backwards. I believe the latter circumstance may be said to be universally the case. If you look from the auricle, you see the light through the chink, in a very remarkable manner. I believe this observation was first made by Mr. Adams, a surgeon at Dublin; who wrote a very excellent paper on Diseases of the Heart, in the "Dublin Hospital Reports."*

With regard to disease of the other two openings of the ventricles,—the opening of the *right* leading into the *pulmonary artery*, and in the *left* leading into the *aorta*,—disease is more frequently found in the valves of the aorta, than in those of the pulmonary artery. This is according to the general rule, that all diseases far more frequently affect the *left* side of the heart, than the *right*. It is a rare thing, indeed, for the *pulmonary* valves to be much diseased; but if they are, the appearances are the same as when the *aortic* valves are affected. When the latter are diseased, they will stand quite firm; and do not give way at all to the common pressure of the blood; so that the opening becomes diminished. The aperture which is left in the middle of the three valves, is sometimes circular; though occasionally it is triangular. It sometimes happens that these valves are completely converted into bone. They then form three shells of bone; but still they retain the appearance they present when there is only cartilage. It is very common to find bone about the aortic valves,—more common than any where else; but next in frequency you find it on the *mitral* valve. It is sometimes found at the *edge* of the valve; sometimes at the bottom of the *sac* of the valves; and sometimes there is bone on the aorta, *opposite* the valves. The quantity of bone is sometimes very great; and occasionally you will find it in minute granules, and not very firmly adherent; so that by rubbing it with the finger, portions come off in the form of grit.

These changes are not the only ones, however, that we observe in the valves. Occasionally we find excrescences; and these are so much like venereal warts on the genitals, that Corvisart, who has written a very good work on Diseases of the Heart, actually believed they were syphilitic. The appearance of warts on the genitals, does not depend upon their being syphilitic, but upon their being morbid growths of a particular structure; and we know that, in the greater

* Volume IV.

number of cases, the warts depend upon mere irritation, without any other cause. These excrescences are very various in their appearance. Sometimes they are variously pointed, so as to exactly resemble venereal warts; and sometimes they are of a very great length. I once opened a body, in which the excrescences were so long, that they nearly reached to the apex of the heart. It was the extremest case I have ever seen. There were a number of projections from the outside of the mitral valve; but it was at the roots of the *aortic* valves that they were so very long.

When the valves become so changed in various ways, they frequently shrink, and become shallow; and they also shrink in breadth. They also frequently become shorter, so that the aperture is altogether diminished; and when bone is deposited upon them, they frequently become brittle; and from being brittle they split and crack. The two valves frequently separate at the point at which they are usually united. They are no longer bound down, and the two are thrown into one; and at that point the valves frequently split to a greater or less extent. This is a very common occurrence. The valve is so corrugated, that the division between the two is lost. This is just the same occurrence that takes place in the interior of an artery, when bone is deposited there. An aneurism arises from the deposition of bone, and not from the mere coat of the artery. Bone is deposited in the middle of an artery, and the coat splits. In the case of the heart, it is not an artery that is affected, and therefore an aneurism is not produced; but the part splits in the same way. Dr. Baillie has given an excellent representation of some of these affections.

When the aortic valves become opaque, thickened, indurated, and rugged, they sometimes corrugate,—so as to curl in towards the side of the aorta; and sometimes so as to turn out. There is nothing very wonderful in all this. Sometimes they are neither curled *in* nor *out*; but remain rugged. A paper was read at a society by a gentleman, announcing this as a very great discovery; but really it was no discovery at all. Corvisart's work * contains a mass of information on diseases of the Heart and Aorta; and is the best you can possess, next to Laennec's on Diseases of the Chest. I recollect he states (without announcing it as any thing important) that sometimes the valves are folded *in*, and that sometimes they are folded *out*. Occasionally you will find that the induration is merely at the *roots* of the valve. On rubbing each, you will find the root semicircular and hard. These are the chief varieties of disease of the valves.

With regard to ossification, although it is seen so commonly in the *aortic* valves and the *mitral* valve, it is a very rare thing indeed to find the disease advancing so far upon the *right* side of the heart; but far more rare indeed to see it proceed so far upon the valves of the *pulmonary artery*. The tricuspid valve of the right side, is far more frequently diseased, than the semilunar valves of the pulmonary

* "Essai sur les Maladies, et les Lesions Organiques du Cœur, et des Gros Vaisseaux."

artery. Thus the aortic and mitral valves are not only far more diseased than those on the right side, but (to go to the latter situation) the tricuspid valve is more frequently diseased, than the valves of the pulmonary artery.

The changes to bone and cartilage, when they occur in young persons, are undoubtedly the result, in by far the largest majority of cases, of mere accidental inflammation; so that without having rheumatism, catching cold, or being exposed to the causes of inflammation, the individual would never have suffered from the disease. But these affections, when they occur in old persons, can rarely, I believe, be traced to any particular attack of inflammation. They appear to be a degeneration of structure dependent upon age. Some parts of the body, under the influence of age, suffer transformations sooner than others; and this portion of the heart will become diseased, in old persons, really from a disposition to organic disease, and not from the result of accidental inflammation. This change of structure is common, in various parts of the body, as individuals grow older.

Although the foregoing are the parts of the lining membrane of the heart, which are most frequently diseased, yet you will occasionally see other parts of the lining membrane of the ventricles and auricles, but particularly the former, thickened very much, and hardened. Sometimes the lining membrane is particularly thickened where it lines the ventricles; while, at the valves, it is in a healthy condition. But this is an exception to the general rule. Now and then you will see a little ulceration of this membrane; bnt that is a very rare occurrence. I am not aware of any thing else worthy of being particularly mentioned, as to diseases of the lining membrane of the heart.

There is one little circumstance, however, which I do not find to be much dwelt upon in books; and it is, perhaps, the result of inflammation. Occasionally, after chronic pericarditis, there will be a deposition of lymph under the mitral or tricuspid valve; which will bind it completely down, so as to prevent it from fulfilling its functions. I have seen several instances of this occurrence. My attention was drawn to it by Dr. James Johnson; or probably I should not have known any thing about it. After I had published a case of this description, I found it had been incidentally mentioned, some years ago, in an account of the dissection of a body; but in the regular books on diseases of the heart, I do not recollect having been able to meet with any mention of the circumstance. You know that the tricuspid and mitral valves have a free floating curtain; and that if lymph be deposited between them and the heart, they may be bound down. A striking instance of the first of these affections, occurred to me; and I have never met but with three or four cases. I have given a representation of the case, in my work on Diseases of the Heart. One half of the valve was bound down, and the other helf remained floating. That half which was bound down, formed a continuous surface into the ventricle. This was a case of common rheumatic inflammation. The woman had had rheumatism, several

times. She had had disease of the valves; and also inflammation of the left ventricle.*

After having troubled you so long with these morbid appearances, we will consider what effect these changes must have upon the functions of the heart. The effect may be two-fold;—it may be to diminish the aperture through which the blood escapes from the auricles or from the ventricles; or it may prevent the valves from doing their duty, in offering an obstruction to the blood when it attempts to come back. Hence these changes may cause an obstruction to the blood going from the auricles to the ventricles, or from the ventricles to the pulmonary aorta; or they may prevent the valves from offering an obstruction to the blood; so that it rushes back, in some degree, from the ventricles to the auricles, or from the pulmonary artery or aorta into the ventricles. When the aperture is diminished, and the valves grow up, then there will be an obstruction to the transit of the blood; but very frequently the valves become so rugged, that they will not distend when the blood attempts to return; and therefore they can no longer perform the office of a valve. When the blood drives back against them, a portion of it goes through; though, of course, not the whole; because, whenever the valves are indurated and rugged, the aperture is diminished; and therefore at the same time that the diminution of the aperture prevents all the blood from going out that should do so, it prevents some from coming back that wishes to do so; and therefore there is not a *complete*, but a *partial* retrocession. Now the same thing will occur, if the valves happen to be bound down; but I have never seen the valve bound down, except in the case of the tricuspid; and I cannot conceive it possible that it can happen in the case of the semilunary valves of the aorta, or of the pulmonary artery; but if the aortic valves are corrugated, and are only half

* Plate III. An account of this case will be found in an extract we have given at page 791. The morbid appearances are thus summed up:—"The tricuspid valve thickened throughout; one-half grown up, and completely adherent to the inner surface of the ventricle, with a hard rounded edge; the other half loose, and put upon the stretch, to shew its extent, and the dimensions of the opening left during the play of the valve. The figure of the heart is altered,—being lengthened by hypertrophy and dilatation of the left ventricle; while the *right* ventricle, remaining healthy, and therefore reaching but a short way down, looks like an appendage to the *left*."

As we have had occasion to refer to the beautiful plates of this book,—plates which had the advantage of being executed by Mr. Skelton (who executed the engravings of Dr. Baillie's work on Morbid Anatomy),—we subjoin a list of them: —"Plate I. Figure I. Pulmonary Artery compressed by a Mass of Cartilage. Figure II. Obstruction at the Mouth of the Pulmonary Artery.—Plate II. Diseases of all the Valves of the Heart.—Plate III. Bulky Solitary Adhesion at the Front of the Heart; with one-half of the Tricuspid Valve completely bound down.—Plate IV. The Left Half of the same Heart as in the last Engraving.—Plate V. Figure I. Thickening, Ossification, Excrescences, and Rupture of the Aortic Valves. Figure II. Excrescences of one of the Aortic Valves.—Plate VI. Aneurism of the Left Auricle. Hypertrophy and Dilatation of Both Ventricles.—Plate VII. Front View of the same Heart as in the last Engraving.—Plate VIII. Figure I. Aneurism of the Ascending Aorta. Figure II. Aneurism of the Left Ventricle; with Lardaceous Tumors on the Surface of the Heart."

their size, then they can furnish no proper obstruction; and a quantity of blood will return. Thus disease of the valves may prevent the blood from going in a natural course; or they may allow it, in some measure, to come backwards.

These occurrences could not be known, formerly, in the living subject; but now that the ears are employed, they may frequently be detected during life. I presume you are aware, that if you place your ear over the heart, or employ the stethoscope with one extremity placed over that organ, you hear two sounds. The first sound which takes place is rather long; and is immediately followed by a short sort of sound; so that you have a double sound when the heart acts. The first sound which you hear, occurs at the moment of the impetus of the heart against the side; and the second immediately after it. The stroke of the heart and the first sound take place both together; and occur, if you feel the pulse at the wrist, a little before it;—at least, in most cases. Sometimes you cannot distinguish any interval at all, between the stroke of the heart and the pulse at the wrist; but very frequently you can; and this, of course, arises from the distance of the radial artery from the heart. If you feel the artery nearer the heart, you find a less interval; if you feel the temporal artery, or the aorta itself, there is no interval at all. You may feel the aorta at the arch; and if you place one finger on that, and one on the heart, you find that the stroke at each is simultaneous; but if you place one finger on the wrist, you find there is an interval; but it is exceedingly small; and it is quite clear that the pulse at the wrist, is immediately consequent on the impulse of the heart. The second sound, which takes place after the impulse of the heart, always occurs, in health, after the pulse at the wrist; and the pulse of the wrist and the stroke of the heart occur so close together, that in common language we may say they are simultaneous. Laennec supposed that the first sound of the heart took place from the contraction of the *ventricle*; and that the second occurred from the contraction of the *auricle*; and so he was able to predict where an obstruction would be found after death.

With regard to the nature of those sounds which occur in health, I will not describe them; because you have only to place a stethoscope, or your ear, over your friend's chest, in the region of the heart, and you will immediately perceive them. But if there be an obstruction, so that the blood cannot pass freely out of the left ventricle into the aorta, or from the right ventricle into the pulmonary artery, then, in most instances, there is an alteration of the sound. If the mouth of the pulmonary artery, or of the aorta be obstructed, a similar effect is produced to that resulting from the arch of a bridge being narrowed; so as only to permit the stream to pass through it at a certain pace. The stream passing through a narrowed arch, makes a whizzing sound, which was not heard before; and so if the blood, while passing from the ventricles into the pulmonary artery or the aorta, meets with an obstruction, it produces a sound not heard in health. This sound occasionally resembles that produced

by a pair of bellows; and is therefore called a *bellows-sound*; or, in French, *bruit de soufflet*. Occasionally it is shrill; and then it is called a *rasping sound*, or *bruit de râpe*. Sometimes it is like the action of a *fine saw*; and then it is called *bruit de scie*. It may resemble the sound of *bellows*, the sound of a *file*, or the sound of a *saw*. We want one word for all these sounds together; and perhaps the term "*preternatural* sound" would be a good generic term for embracing them. I have used it, in my work on "Diseases of the Heart," to comprehend them all.

If the obstruction be between one of the auricles and the corresponding ventricle, then it is the *second* sound which is altered; and it is after the beat of the heart,—after the pulse at the wrist, that you hear this preternatural sound;—whether it be a *bellows*, a *sawing*, or a *filing* sound. There is a difference of opinion, at this moment, as to whether Laennec was right in ascribing the second sound to the contraction of the auricle; and I am inclined to believe that he was wrong. My reason is this. On passing the stethoscope over the heart of a jack-ass, when the heart was laid bare,—according to the experiment of Dr. Hope,—I heard the second sound when the stethoscope was placed upon the ventricle. The sound clearly came from the ventricle; and I was told by others who could see what happened, that the auricle did not contract at that time. But although I dare say the sound did not arise from the mere contraction of the auricle, yet I have no doubt that it took place at the very moment when the blood passed from the auricle into the ventricle; because, as soon as the two ventricles have contracted, they dilate; and the instant they dilate, the blood must rush into them. A vacuum is formed by the dilatation; and the blood must rush out of the auricles into them; and I believe this is a passive circumstance. The contraction of the auricle appears to have little to do with it. When the ventricle dilates, the auricle empties itself; but, as far as I could observe in the experiment made, it does this in an irregular manner. However, a vacuum cannot be formed in the *ventricle*, without the blood escaping from the *auricle*; and therefore I am quite sure, that when there is an obstruction between the auricle and ventricle, you hear a bellows-sound at the moment you should hear the second natural sound of the heart. You may form an accurate diagnosis in this way. I have done it over and over again; and have always predicted the exact part where the obstruction existed. I have always taken it for my guide, that where a bellows-sound was heard at the moment of the stroke of the heart against the side, there was an obstruction, either at the mouth of the *pulmonary artery*, or at the mouth of the *aorta*; and, on the other hand, where a bellows-sound has been heard *after* the first natural sound, that then there has always been some obstruction to the course of the blood from the auricle into the ventricle; or else that the valves at the mouth of the aorta, or of the pulmonary artery, have not done their duty; so that the blood has partly rushed back into the ventricle. Whatever may be the cause of the second sound heard in the heart in health,—

whether the dilatation of the ventricle or not, it is at that moment that you hear the bellows-sound, when there is an obstruction to the course of the blood from the auricle to the ventricle.

Laennec (as I believe I before remarked) states that at the moment of the pulse at the wrist,—at the moment of the stroke of the heart against the side, the blood leaves the ventricles, and rushes into the pulmonary artery and the aorta; and that it is immediately after this, that the blood leaves the auricle, and rushes into the ventricle; —so that the first sound of the heart occurs at the moment of the stroke of the heart, and the pulse at the wrist, or just before it,—the difference being exceedingly minute; and depends upon the rush of the blood from the ventricle; and the *second* sound depends upon the rush of the blood into the ventricle from the auricle. Laennec, I believe, considers, the *first* of these sounds to be the effect of contraction of the *ventricle*; and the *second* to be the effect of contraction of the *auricle*. It perhaps may be doubted whether, in the latter case, it arises from a contraction of the auricle; but I think there can be no doubt it takes place at the *period* he mentions; though, in all probability, it arises from the flow of the blood out of the one cavity into the other. It has been said, that if you inspect the heart of a living animal, you see that the auricle contracts before the ventricle;—the reverse of what Laennec has stated. This, certainly, I have seen. But it is to be considered, that the muscular part of the auricle is very inconsiderable; that the greater part is a mere venous sinus; and, I imagine, it must be when the ventricle is dilated, that the blood rushes into it. Now the ventricles dilate the moment after they have contracted; and therefore I should conceive, that this rush of the blood from the auricle, is an effect independent of the *contraction* of the auricle;—that it is merely the effect of a vacuum produced in the ventricle by its dilatation; so that the blood rushes on, as it does from the venæ cavæ. In the experiments I saw, the auricle contracted with great irregularity;—sometimes *before* the ventricle, sometimes *after* it; and I have seen five or six contractions of the auricle, to one of the ventricle; so that I do not think the ventricle is filled by the action of the auricle. Another great argument is, that I have been able to make an accurate diagnosis, by observing the periods of the morbid sounds, as Laennec has stated them. Whenever there has been a contraction of the mouth of the aorta, or of the pulmonary artery, the preternatural sound,—whether it has been a *bellows*, a *sawing*, a *rasping*, or a *cooing* sound,—has been at the moment of the stroke of the heart. Whenever the tricuspid, or the mitral valve, has been diseased,—whenever I have seen the opening between the auricle and the ventricle (or either side) contracted or narrowed, then the morbid sound which I have heard has always been *after* the pulse,—*after* the stroke of the heart;—shewing that it is at that time the blood leaves the auricle; that is to say, it is as soon as the ventricles have emptied themselves and dilated again. Details have been published of a post-mortem examination, which took place abroad. It was the case of Dr. Hopkins,

who was formerly a lecturer at Mr. Grainger's Medical School, in the Borough. It is stated in the account just referred to, that the left ventriculo-auricular opening of the heart was ossified, in its whole circumference, for three lines in breadth; and that there was a singular contraction of the opening. It so happened that this gentleman came to me, about six months before his death, with œdema of the lower extremities, and difficulty of breathing. I examined his chest; and, in a moment, found signs of dreadful disease of the heart. I made pretty extensive notes of the case, at the time; and founding the diagnosis on what Laennec has said, I stated there was disease of the mitral valve. In that case, I heard a very extraordinary sound, immediately after the stroke of the heart. It was not a bellows-sound, but a variety of preternatural sounds; and sometimes there were two or three of them in rapid succession. It occurred immediately after the pulse; and was heard on the left side of the heart's region. When I listened with the naked ear, instead of this extraordinary sound, it appeared like the sound of a saw. I did not doubt that he had disease of the mitral valve; or, if there were not an obstruction to the course of the blood from the auricle into the ventricle, that the aortic valves were so diseased, as to let a little blood come back. I therefore wrote down in my note-book,—"Disease of the mitral valve, or else imperfect action of the aortic valves." Of course, if Laennec be wrong, it stands to reason that the sound I heard, ought to have been heard at the moment of the heart's action. But here is a dissection taking place in a foreign country, by a person who knew nothing of me or of my diagnosis; and here are the post-mortem examination, and my written account of the state of the heart, corroborating each other. This shews us, as more than twenty or thirty cases have done before, that Laennec is right. He may be wrong in saying that the auricle contracts then; but I cannot consider him incorrect in saying that the blood rushes, at that moment, from the auricle into the ventricle. Some ascribe the sound to the circumstance of the ventricle dilating; but I am not aware that it gives a sound. I should think it more likely that it is owing to the rush of blood into the ventricle. I regretted, when Dr. Hopkins went abroad, that I should not have an opportunity of comparing the dissection with the diagnosis; and therefore I was gratified when I saw the case published. *

Why it is that you have sometimes a bellows-sound, and sometimes a sound resembling the action of a saw or a file, is not well known. Some have supposed, that when there is ossification you have a shrill sound; but that is not proved. I should imagine that it depends on two or three things together. If the opening be very small, and the action of the heart be driving on a large quantity of blood, I should

* Laennec's account of the sounds of the heart, is now pretty well exploded. Investigations on the subject have been pursued, with great ardour, by Drs. Hart, Stokes, Corrigan, Haycraft, Adams, Hope, Williams, and Badham; and, more lately still, by the London and Dublin Committees of the British Association for the Advancement of Science. No settled creed has yet taken the place of the rejected one.

think it would be shrill; but if the opening be small, and the action of the heart not very strong, then the feeble influence of the blood will, I should think, not cause the shrill sound. If the parts were soft, then you might have a shrill sound.

It has been supposed that the auricle contracts before the ventricle, —for this reason;—that in the case of an obstruction, you see the jugular veins swell at the time of the stroke of the heart. Before the pulse is felt, indeed, the jugular veins will sometimes swell, in a case of disease of the heart; and will pulsate strongly. It is supposed that when the auricle contracts, then an obstruction must take place in the veins, and the blood accumulate there. For myself, however, I do not think that, at the time the auricles contract, there is any obstruction in the veins at all; for when they lose their blood, the ventricles must be open for the blood to rush into them; and, consequently, there is a free passage for the blood. When the ventricle is *contracting*, there must certainly be a great obstruction to the blood; but the moment the ventricles *dilate*, that moment the auricles act; and the action of the *auricle* cannot cause an obstruction, because there is a free course for the blood to rush into the *ventricle*. It is hardly possible to make you understand the subject in the short space I can now devote to it; but you will see the arguments at page sixteen of my book.*

When you hear these peculiar sounds, a moment after the pulse, and after the action of the heart, you cannot say with certainty, that they arise from a difficulty to the transmission of the blood from the auricle; and for this reason. If the valves at the mouth of the pulmonary artery and the aorta do not do their duty, but let back a portion of the blood, (as is very common in the case of the aorta), I believe the rushing back of a small quantity of it, will occasion the bellows-sound. You are aware, that the moment the ventricle has acted and dilates again, the blood attempts to rush back into the vacuum; but is prevented by the three aortic valves, which are filled out in a moment. But if it so happen that one is torn, or becomes corrugated and small, then a certain portion of the blood will regurgitate; and as it is not the *whole* of the blood in the aorta that can go back, but a *minute portion* that passes through the small opening which is left, (the valves doing their duty to some extent), that is sufficient to cause the bellows-sound. If the *whole* of it regurgitated, doubtless there would be *no* bellows-sound; but if only *one* valve be torn, or corrugated, or if the whole of the valves be *partially* corrugated, then the small portion which returns causes the bellows-sound. Now you will see that this must take place synchronously with the emptying of the auricles. The same cause which makes the blood rush from the auricles,—namely, the dilatation of the ventricle,—also attempts to make the blood rush back from the aorta and pulmonary artery into the ventricle. The blood attempts to go from the *auricles*, and does so with success; and at the same instant it attempts to do so

* For these arguments see Appendix, No. VIII.

from the *aorta* and *pulmonary artery*, but cannot; and it is at this moment that we have the morbid sound. Suppose it is one of the auriculo-ventricular openings that does not do its duty;—suppose the tricuspid valve on the *right* side, or the mitral valve on the *left*, is bound down on one side; or suppose it is diseased, so that there is a constant aperture there, through which a certain portion of blood must rush back from the ventricles into the auricles;—then you have a bellows-sound, from this cause, at the time the ventricles contract. I have frequently heard a bellows-sound, at the moment of the pulse;—arising, not from an obstruction to the course of the blood out of the ventricles, but from a valve between the auricles and ventricles not doiug its duty; so that a small portion refluxed. Before I was aware of this circumstance, in one or two cases, I gave a false diagnosis; and said that there was an obstruction to the course of the blood from the ventricle; whereas it turned out that the valve between the auricle and ventricle, was not performing its functions properly. Hence, when there is a bellows-sound at the moment of the heart's action, it may arise from disease of the *aortic* valves, or from disease of the *mitral* valve; and when the bellows-sound takes place *after* the pulse, it may be the result of an obstruction to the course of the blood from the *auricle*, or from a certain portion rushing back into the *ventricle*. You may say, in every case, that it is caused by one of these two circumstances.

The first case in which I found I had made a false diagnosis, was one of which I have given an engraving.* The preparation is at St. Thomas's Hospital. There was a loud bellows-sound at the moment of the pulse; and I therefore concluded, that there was an obstruction at the mouth of the aorta, or of the pulmonary artery. But I found that the mitral valve was bound down; so that there was a constant opening; and when the ventricle contracted, the blood refluxed freely into the auricle.

You may have these diminished openings from various causes. Sometimes the valves are diseased in the way I have shewn you. The valve may be indurated,—become cartilaginous,—become bony; and the opening may be organically diminished. The aperture is sometimes decreased by excrescences. Twice I have seen the valves perfectly sound, and the pulmonary artery contracted immediately beyond the valves; so that a very minute aperture only existed, for the blood to escape through. In one of these cases the disease arose (as it does in so many instances in young persons) from violent pericarditis. The pericarditis had gone on to produce cartilage under the pericardium; and the cartilage had dipped down so much into the substance of the heart, that it pressed upon the origin of the pulmonary artery, and there produced a great obstruction. In that case there was a bellows-sound, heard at the moment of the pulse. I heard it on the right side of the heart's region, in the situation of the right ventricle; and it was written down in the hospital-books,

* See Plates III and IV of Dr. Elliotson's work on the Heart.

—"Difficulty to the transmission of the blood from the right ventricle to the pulmonary artery." What the cause was, I did not know; but a mass of cartilage existed in the substance of the heart; extending from the inner surface of the pericardium, down into the substance of the heart; where it produced a great diminution of the calibre of the pulmonary artery. You will find a representation of the case in one of my plates.* I have never met with but two cases of obstruction of the pulmonary artery. Disease of the valves of the pulmonary artery, is exceedingly rare. In fact, you are aware that all diseases are far less common on the *right* side of the heart, than on the *left*. In the second case the diagnosis was equally correct. There was a loud bellows-sound on the right side of the heart, at the moment of the pulse; and after death just such a disease was found as I have now described to you;—that is to say, the pulmonary artery was exceedingly diminished, so that the blood could not escape from the ventricle. There is an engraving, in my work, of a

* The plate here referred to is the first; in which the case in question is the subject of Figure I. It is described as,—"A portion of the right ventricle of the heart in a middle-aged man, in which a mass of cartilage compressed the pulmonary artery at its origin. Through an oversight, the specimen was allowed to putrefy; and the whole was destroyed, except (fortunately) the portion of the right ventricle at which the artery rises, the semilunar valves, the commencement of the artery, and the cartilaginous mass. Besides various symptoms from pulmonary and other cardiac disease, there had been a bellows-sound at the lower part of the sternum and to the right of it, at the moment of the pulse. The production of cartilage originated in pericarditis. The pericardium was throughout coherent and thickened, and was cartilaginous in several other points than where the great mass existed."

In reference to this case, and another of a similar description, Dr. Elliotson has the following interesting remarks, at page 19 of his work:—"Twice only have I heard the preternatural sound from an obstruction (visible after death) to the entrance of the blood into the pulmonary artery. In each case, the pericardial cavity was abolished by complete cohesion of the parietal and cardiac portions of the pericardium. In some spots, the membrane was cartilaginous; and, in each case, a knob of cartilage dipped from the pericardium so deep into the substance of the heart, as to narrow the right ventricle considerably, just at the origin of the pulmonary artery. In one of the cases, the pulmonary artery was contracted to the dimensions of the brachial. Unfortunately, I have not both specimens; for one body was opened, after its removal from St. Thomas's Hospital, in an alley of a miserable back-street in the Borough; while three Irishmen stood at my side looking so determined, that I did not venture to attempt to gain possession of the parts. The other specimen was allowed to macerate in water till it was nearly spoiled; but the knob of cartilage remains. A bellows-sound had been heard constantly in each patient, at the ventricular action, synchronously with the pulse, and loudest at the lower part of the sternum;—the region of the right ventricle. As may be imagined, the general venous system suffered an accumulation of blood;—the eyes suffused; the face of a leaden hue; the lips purple; the external jugulars, and superficial veins about the angles of the jaws and clavicles, exceedingly distended; and the legs anasarcous. The pulse was quick and irregular; but, from the obstruction existing *before* the blood entered the lungs, the dyspnœa was inconsiderable. The diagnosis of the cases was so evident, that it was pronounced long before death took place; and the two cases stand recorded in the public books of the Hospital. There was no symptom, nor any *intensity* of symptom, referrible to the adhesion of the pericardium. The obstruction explained every symptom."

case which I did not see; and therefore I do not know what the particular symptoms were; but there was a loud bellows-sound.* The case occurred at St. Bartholomew's Hospital; and the heart was shewn me when lecturing at the College of Physicians. The patient was a young woman, and died from this affection. I should think it was a case of malformation; because I did not perceive any sign of disease of the heart. She was dropsical all her life; and, at last, there were signs of great obstruction. The older she grew, the more the heart increased in size; but the opening never enlarged. There were more and more ill effects the longer she lived. These are very rare cases indeed. If any thing, by chance, press upon the aorta, or upon the pulmonary artery, you have this bellows-sound. Although there may be no disease of the vessel itself,—no disease of the valves,—no disease of the opening, yet extreme pressure will have the same effect. I recollect seeing a case where there was a piece of bone between the aorta and the pulmonary artery; and it pressed on both. There was a bellows-sound at the time of the pulse, on both sides of the chest.

You may, however, have a preternatural sound, while the opening remains quite natural; quite as it should be. I think we had better use the word "*preternatural*" as a generic term, to include all the sounds I have described. The cavity *behind* the opening, however, is very much dilated; and in that way the opening is *relatively* small, although not *absolutely*. Nature, of course, has established exact proportion between the size of the *openings* and that of the *cavities*; and the natural dimensions are those which allow the blood to pass through in the most easy manner, and with the least noise. Thus, the natural proportions, you perceive, may be destroyed in two ways.

* This engraving is the second in Plate II. The following observations are made respecting it:—" Part of the interior of the right auricle and ventricle of a heart, in which the substance was grown together round the mouth of the pulmonary artery; leaving a very small opening, beyond which was the real mouth of the artery, of its natural size, with its valves. I fancy that the state was congenital; for there were no other marks of disease; whereas there was an evident malformation, in the existence of two little supernumerary right ventricles;—one leading from the pulmonary artery, just beyond the valves; and the second leading from the first. Besides this, the patient (a very young woman) had *always* suffered from dyspnœa. She died at Bartholomew's Hospital, with great dyspnœa, venous congestion, and dropsy. A strong bellows-sound was heard. I did not see her; but the specimen is deposited by Dr. Hue, in the Museum of the College of Physicians. The walls of the right ventricle appear to be grown up round the mouth of the pulmonary artery; so that the opening from the ventricle is no larger than a goose-quill; and a short canal, of this dimension, had to be traversed by the blood, before it reached the mouth of the artery, which is of the usual size."

The following observations, in connexion with this case, are exceedingly interesting:—" Disease of the mouth of the pulmonary artery, is still rarer than thickening and narrowing of the tricuspid valve. A case is mentioned by Bertin, where a sort of hymen existed at the mouth of the pulmonary artery; but it was probably congenital; and this is the only instance of obstruction, that he ever saw at that spot. I have never seen obstruction from disease of the pulmonary semilunar valves. Bertin refers to two;—one in Morgagni, and one seen by M. Louis at La Charité."

The cavities may remain the same, and the openings become too small; or the openings may remain the same, and the cavities become too large. In the latter case, the openings are no longer large enough for the cavities; and in either case you have the bellows-sound. You must not be surprised, therefore, after a bellows-sound, to find the openings in a natural state; because the cavity may be too large. Nay, when this is the case, the least alteration in the position of the heart, will sometimes cause a bellows-sound; and by position, the free course of the blood from the left ventricle may be destroyed. I once had a very curious case of this kind. A woman laboured under ascites; and I found a bellows-sound in the heart. I was anxious to know the cause of the ascites; and wished to ascertain whether there was organic disease. I examined the heart, and found a bellows-sound at the moment of the pulse. She was tapped; and no sooner was the operation performed, than the bellows-sound went away. The water accumulated again, and with it the bellows-sound returned. In this case, after death, the opening was found healthy; but the left ventricle was dilated. It appeared to me, in that case, that the diaphragm being pushed up by the water, tilted the heart a little,—prevented it from being quite in its natural situation; and caused the apex to rise in such a way, that the passage of the blood into the aorta would be a little impeded. If the position of the heart be altered,—if the apex be lifted up, no doubt the blood will experience a difficulty in going into the aorta. In this case, it was quite proved that it arose from some such circumstance; because, when the heart was pushed up with the diaphragm by the water, there was a bellows-sound; and when the diaphragm was let down,—the heart going with it,—the bellows-sound ceased. In any case where you hear a bellows-sound at the moment of the pulse, you *may* find pressure from the abdominal viscera. When a person is upright, and the bellows-sound takes place at the moment of the stroke of the heart, if you make him lie flat, you find the bellows-sound increased; —owing to the abdominal viscera pressing up, and the apex becoming a little tilted. I have frequently not heard the bellows-sound at all, when a person labouring under disease of the heart has been standing up; but on making him lie down, I have heard it distinctly. In almost all cases, when there is a bellows-sound at the stroke of the heart, arising from an obstruction to the blood in passing from the left ventricle, if you make the patient lie down, you hear it with greater force; and I should advise you, therefore, in these cases, to listen to the sound in both ways. I presume the circumstance arises from the same cause, when a bellows-sound is heard in the case of the aorta. When a person lies down, the abdominal viscera press against the diaphragm, and alter the position of the heart; so that the blood cannot so easily escape from the aorta. You know that when there is difficulty of breathing, patients wish to sit up; and then the heart falls more into a vertical position. In hypertrophy of the heart, you frequently hear a bellows-sound where there is no great dilatation. If it so happen that the substance

of the heart is much thickened,—that the columnæ carneæ are much thickened near the mouth of the aorta (towards the semilunar valves),—the increase of the flesh of the heart will cause a little obstruction; so that you have a bellows-sound. Frequently, therefore, in opening bodies where there has been a bellows-sound, you find some other cause than disease of the opening. You may find something pressing on the outside of the aorta;—you may find the substance of the heart increased;—you may find the heart out of its due position;—you may find the cavity behind the opening so much dilated, that the latter, although of its natural dimensions, is not big enough for the enlarged cavity which forces its blood through it.

It would appear that sometimes the bellows-sound is only a temporary phenomenon, dependent upon spasm or irritation. Sometimes there would appear to be a spasm in the neighbourhood of the opening; for a person will have a bellows-sound one day, and not another. It is said that hysterical women sometimes have this bellows-sound; and they have spasmodic affections of various parts.

Frequently, if you take blood away, you diminish the bellows-sound, and even remove it altogether. If you lessen the quantity of blood that has to go through the opening, there will be less obstruction felt; and therefore by bleeding to a certain amount you diminish (or, it may be, entirely remove) the bellows-sound. Sometimes in inflammation of the heart this bellows-sound is heard; and as you subdue the inflammation, it may never return. In this case, the parts may be thrown into a spasmodic state;—just as in the case of the urethra, when that is inflamed. You know that a spasmodic stricture may take place, so that no water can pass; and on bleeding the patient, the affection is removed. So, I conceive, it may happen with the opening of the heart. Again, the bellows-sound will be heard if you bleed a patient *too much*. You may bleed a patient till you get a sharp pulse; and then you may be led to suppose that inflammation exists, although the person may be blanched like wax. Now when a patient has been thus reduced, I have been told, by many, that a bellows-sound has been heard. I presume that, in this case, the bellows-sound arises from the violent action of the heart. It attempts to drive the blood away faster than it can go with ease. You may, however, have a bellows-sound simply from great *plethora*. There is such fulness of the heart, that the blood cannot escape through the opening; and, on the other hand, you may have such a rapid action of the heart, that more is attempted to be forced through it than the opening will allow.

In observing these morbid sounds, I advise you to use the stethoscope without the plug. Laennec does not mention the circumstance; but if you examine the sounds of the heart with the plug in the stethoscope, and then take it out, you will generally hear the sounds far louder without the plug. I am quite sure of this. I have proved it myself, and mentioned the circumstance to others; and they have always said they found it to be the case. It is right to examine a patient labouring under disease of the heart, with the plug

in as well as *out*; because, when a plug is in the stethoscope, you have a larger surface for the heart to strike against.*

There are, of course, other symptoms induced by this difficulty to the transmission of blood, besides those which are to be learned by the ear. If there be any difficulty to the transmission of blood in the heart, the cavity behind is very much disposed to dilate. The blood not going out with ease, accumulates; and gradually causes a dilatation. This is a very common circumstance; but it is very curious that you do not, by any means, always have the dilatation in the cavity immediately behind the obstruction. The auricles are much thinner, you know, than the ventricles; and therefore they more easily become dilated. In a case of obstruction of the mouth of the aorta, it is very common not to see the left *ventricle* dilated, but the left *auricle*, and even the mouth of the auricle. The effect of an accumulation of blood, is frequently felt at a great distance from the seat of the obstruction. Sometimes, in the case of obstruction at the mouth of the aorta, you see the left *ventricle* dilated; but more frequently it is the *auricle*. In disease of the mitral valve, you of course cannot expect dilatation of the left *ventricle*, because it is beyond the obstruction; but you may expect dilatation of the left *auricle*; and you may expect dilatation of the *right* auricle, or even of the right *ventricle*; because all these parts are *behind* the obstruction, wherever that obstruction may be; but it is by no means an invariable rule, that the dilatation should be immediately behind the obstruction. When there is an obstruction at the left side of the heart, either at the mouth of the aorta or at the auriculo-ventricular opening, you will have the obstruction shewn particularly in the lungs. Dr. Wilson, of St. George's Hospital, has mentioned that he has frequently seen what is called "apoplexy of the lungs," after an obstruction of the mitral valve. You will continually meet with an obstruction of the mitral valve, without any such circumstance; though certainly it will very frequently happen; but in almost every case, you see a general fulness of the lungs. Although you may not see pulmonary apoplexy, you may expect to find a great congestion of blood in the lungs; and this soon shews itself in the whole of the venous system. The obstruction is soon felt beyond the lungs, on the right side of the heart.

* The following additional observations on this subject, occur in a note at page 16 of Dr. Elliotson's work on Diseases of the Heart:—"Laennec employed the stethoscope in its entire state, to examine the heart; and the presence of the plug is certainly advantageous in ascertaining the *impulse*. But for observing the *sounds* of the heart, the instrument is much better without the plug. The excavation renders the sounds far more audible." The same note contains some remarks on the form and materials of the stethoscope itself:—"After trying an infinite variety of stethoscopes, I am satisfied that a stethoscope in one piece, of the most simple form, and of cedar-wood, is inferior to none, and superior to many;"—an opinion which agrees with that of another great authority on the subject,—Dr. Stokes. The remark which follows is of great practical importance:—"It is often very useful to make the patient suspend his breath for a few moments, while we are listening to the sounds of the heart. The murmur of respiration is often mistaken for a cardiac bellows-sound; and in dyspnœa, the sounds of the lungs sometimes completely overpower those of the heart."

Of course any obstruction on the *left* side, can only act on the system at large. If the blood do not escape easily from the pulmonary veins, it accumulates in the lungs, and therefore it will not pass freely out of the pulmonary artery; then the right ventricle suffers, and all the venous system. The consequence of all this, is great fulness of the veins of the neck, frequently of the head, and sometimes of all the veins of the body; and then general dropsy;—not only a swelling of the ankles, and œdema of that part; but *general* œdema, which is called *anasarca*,—universal dropsy. And then, from the great accumulation of blood in the head, you have headache and drowsiness, and perhaps apoplexy;—effusion into the brain and upon the brain. The patient's countenance is blue; his lips are pale; and perhaps the nose and eyes look exceedingly livid. In many cases of this description, you will observe effusion first of all about the eyes. Before the face and neck become œdematous, you will see a puffiness of the lower eye-lid particularly. Indeed so striking is it, that many persons have said, that it is an invariable sign of disease of the heart. At any rate, when there is an obstruction to the course of the blood in the chest, you find a puffiness of the lower eyelid.

Besides these, there are symptoms in the heart itself. There is palpitation, a great sense of fainting, and great difficulty of breathing,—particularly on motion. In this and all other diseases of the heart, the lungs are very much disposed to fall into a state of chronic bronchitis; so that the patient not only coughs but expectorates; and perhaps expectorates *blood*; and the difficulty of breathing becomes extreme. The quantity of urine is diminished; and then, frequently, a great accumulation of blood takes place in the liver, as well as in other parts; and at length there is effusion, not only into the pleura on each side, but into the peritoneum; so that perhaps, at last, you have not only œdema, but general dropsy.

There are two or three other points which I wish to speak of, before I leave the subject of diseases of the lining membrane of the heart; and the peculiar and preternatural sounds, to which a narrowing of the different orifices gives rise. These preternatural sounds are heard far more frequently on the *left* side, than on the right; because (as I have repeatedly observed) *all* diseases of the heart are so much more common in that situation. You will find, however, in an infinitely greater number of instances, a preternatural sound at the moment of the stroke of the heart, than either before or after it. I hardly recollect a single instance of a patient at St. Thomas's Hospital, this winter [1831–2], having a preternatural sound of the heart, except at the moment of the stroke of that organ;—so much less frequent is it to hear a preternatural sound at the time the auricles allow their blood to go into the ventricles. All cases of a bellows-sound, in which there was no real narrowing of the openings to be found after death, occurred at the time of the stroke of the heart; and where it has arisen from a temporary cause, and has gone off again, it has been at the same period;

so that the impediment appears to have been at the mouth of the aorta. In the particular case which I mentioned, where a woman had a bellows-sound as long as the abdomen was distended with liquor, and no longer,—for it ceased when she was tapped, and returned again when the water re-accumulated,—it was heard at the moment of the pulse. By far the most frequent seat of it, is the aperture leading from the left ventricle to the aorta.

I need hardly tell you that, in general, the bellows-sound, when it arises from an obstruction of the mouth of the *ventricle*, is heard in the *lower* part of the cardiac region, in the situation of the ventricle; whereas, when it proceeds from a diminution of the opening of one of the *auricles*, it is heard at the *upper* part;—the auricle being situated above, and the ventricle below. You may sometimes hear the bellows-sound, not only in the situation where the obstruction exists, but to a great extent around. I have frequently heard it in the right axilla, when the heart was not at all enlarged; but frequently it is only perceptible at the place where the obstruction exists; and when you do hear it in various parts, it is always loudest in the immediate seat of its cause. You generally, therefore, have it loudest in the case of the *ventricles*, at the *lower* part of the cardiac region; and in the case of the *auricles*, or auriculo-ventricular openings, at the *upper* part. When it is on the *left* side, you hear it loudest in the *left* half; and when on the *right* side (where it is rare) you hear it loudest at the *right* part of the cardiac region.

You will sometimes hear a *double* bellows-sound;—one sound at the stroke of the heart, and then another immediately after it;—like something falling against some other object, and then falling back again directly. I believe that, in these cases, there is a degree of obstruction to the passage of the blood, so that you have the *first* bellows-sound; and then, as the valves do not perform their duty perfectly, but permit a portion to reflux, you have the *second* bellows-sound. It is by no means a rare thing to hear this double sound; though it is not nearly so common as a single sound. When the mitral valve is grown up, so that you have merely a circular opening in the middle, of course there is great obstruction; and as the valve does not do its duty well, some of the blood always comes back, and you have a double bellows-sound. So, in the case of the aortic valves, the opening is sometimes much diminished; and you have a bellows-sound when the blood rushes out; and the semilunar valves being corrugated, a portion returns; and thus you have a sea-sawing sound,—backwards and forwards.

I mentioned that, in the case of the bellows-sound which occurs at the stroke of the heart, it is heard loudest when the patient lies down; and sometimes you can hear it only when the patient is in a horizontal position; but when he is standing up, it is always diminished. You will hear variations in this respect, however, according to the force of the heart. Sometimes the pulse is very irregular; so that first you have a strong thump, then a slight one, and then several strong ones. Now in these cases, if there be a diminution at the

mouth of the aorta, when the heart acts moderately, it gives short strokes; so that the blood is not sent violently through the opening, and therefore it finds its way pretty well; but when it acts violently, such a torrent of blood is driven against the opening, that a great obstruction is felt; and then you have a loud bellows-sound. Thus, when you have a bellows-sound, and the heart acts irregularly, you will sometimes hear it loud, and sometimes very inconsiderable; according to the quantity of blood driven against the opening, and the degree of obstruction experienced. If the parts be not very rigid, when the stroke of the heart impels the blood, it may force its way, and the obstruction will not be much felt; but if the parts will not give way, the greater the impulse, the more is the obstruction felt.

You will sometimes perceive another circumstance when there are these bellows-sounds; and that is, if you lay your hand over the heart, you will find a vibration, like the purring of a cat. It is just the same gentle vibration, as that which you feel on placing your hand on a cat's back, when she is purring. This has been called the *purring thrill.* I do not recollect noticing it in the case of the heart, except where there was a bellows-sound; and it appears to arise from an obstruction. It is nothing more than a jar given to the heart, by the blood attempting to pass through the obstructed opening. It is by no means generally observed; but, every now and then, you will feel a vibration in the region of the heart, at the moment the bellows-sound is heard.

With regard to the heart's action, it varies both as to force and as to frequency. It has been thought that this indicated the want of a free opening; but you will find that intermissions of pulse, and irregularity of pulse (both as to force and frequency), will take place when there is no obstruction; and I do not know the particular state of the heart that gives rise to these variations. You will continually observe this occurrence, in old people, who never had disease of the heart. It is more frequently observed when there is an obstruction of the mitral valve; but it is by no means a necessary consequence of it. The tendency of an obstruction on the left side of the heart, must evidently be to produce a small pulse. The heart may act with great violence; but if there be an obstruction at the mouth of the aorta, the pulse must be small. If there be an obstruction of the mitral valve, so little blood can escape through it from the auricle to fill the ventricle, that the latter has but a small charge to pour forth; and in that case you have a small pulse. Smallness of the pulse may arise from an obstruction between the left auricle and ventricle, just as easily as from an obstruction of the mouth of the aorta; but although it is the effect of these circumstances, it is not the result of them *alone.* You will continually have a small pulse from many other causes; one of which, we shall see presently, is a diminution of the cavity of the left ventricle. If the left ventricle becomes hypertrophied, and the cavity diminished, so little blood can be poured into the arteries, that you have a small pulse. The heart may beat very violently; but when the cavity is

diminished, there is so little room for the blood, and therefore so little blood to escape, that you have a small pulse.

There are no symptoms, except those learned by the ear, to indicate particularly what is the seat of the obstruction; or, indeed, whether there is any obstruction at all; but you will be much deceived, unless everything be taken into consideration. If you hear a bellows-sound, it is not right to infer that there is structural disease of the heart. In order to justify you in thinking that there is organic disease of the heart, the sound ought to be heard *constantly*,—not to-day only, but to-morrow and every day; and even then you ought not to be satisfied of it, unless you find other symptoms;—such as an enlargement of the heart, a dulness of sound to a great extent, anasarca, great distention of the veins, and so on. The whole circumstances of the case must be taken into consideration. Useful and important as it is to attend to the sounds addressed to the ear, yet it is absurd to depend upon any one of these; and to neglect observing the whole state of the patient;—to neglect observing all the general symptoms, which medical men notice in the ordinary way.

It has been thought that when there is an obstruction on the *right* side of the heart, the jugular viens are more distended, and the obstruction in the venous system more evidently shewn, than when it occurs on the *left*. This is no doubt a fact, up to a certain point; but it is to be remembered, that an obstruction on the *left* side of the heart must produce the same effects, after a time. There will at last be great congestion in the lungs; and, in consequence of that, there must be an obstruction to the blood passing on the right side of the heart; then there must be a distention of all the veins, and dropsy. You cannot depend upon these symptoms alone. When you see the veins of the neck distended, that circumstance, considered in itself, will not justify you in saying that the obstruction is seated on the *right* side of the heart. It *may* arise from an obstruction there; but there may be a real organic obstruction on the *left* side. There is, however, this difference;—when the obstruction occurs on the *right* side, there is far less difficulty of breathing than when it takes place on the *left*. The blood is not at all impeded in its progress through the lungs; the obstruction exists before it goes there; but when the obstruction is on the *left* side, it causes great dyspnœa, on account of its producing congestion of the lungs. But great reliance cannot be placed on this point; and for this reason;—in structural disease of the heart, the lungs are much disposed to become diseased too. From their contiguity to the morbidly affected heart, they are much disposed to fall into chronic bronchitis; and when that occurs, you have all the signs of difficulty of breathing, and of congestion of the blood. Still it stands to reason, that if there happen to be no chronic bronchitis,—no affection of the lungs, you will not have dyspnœa when there is an obstruction only on the *right* side of the heart; whereas, if the obstruction be on the *left* side, you must expect it.

I will now proceed to the consideration of diseases of the *substance* of the heart; and I think this arrangement will make the matter plain. First we considered the membrane *investing* the heart; then the membrane *lining* the heart; and now we will consider diseases of the *muscular substance* of the heart.

CARDITIS.

The substance of the heart is now and then, but very rarely, the subject of acute inflammation. I do not myself recollect having seen an instance of it; but you will find a most decided case recorded by Mr. Stanley, in the seventh volume of the "Medico-Chirurgical Transactions." The symptoms of this disease, would be very similar to those of pericarditis. In the case mentioned by Mr. Stanley, there was pericarditis likewise present. I hardly think it can exist without that affection being conjoined with it. Extreme faintness has been observed. There is sometimes extreme faintness in *pericarditis*; but it is not common. In the case of inflammation of the substance of the heart, however, extreme faintness has been noticed; —fits of syncope indeed. After death, in these cases, the substance of the heart has been found soft, and black with congestion. The accumulation is so great, that the substance of the heart is black. In Mr. Stanley's case, the disease had proceeded even to suppuration; so that there were little collections of pus, with which the heart was studded.

HYPERTROPHY AND DILATATION OF THE HEART.

Although the disease I last described is very rare, and must be treated like pericarditis, yet chronic inflammation of the heart is by no means rare. On the contrary, it is a common occurrence. I believe that hypertrophy of the heart is, in general, an inflammatory disease; and my reason for supposing so is, that it is a very common effect of pericarditis. An over-nourished, thickened heart has been found, under the microscope, to be redder than natural; and when the fibres were steeped in distilled water, they imparted greater redness to it, than a similar quantity of fibres from a healthy heart. In hypertrophy of the heart, the coronary arteries are very commonly enlarged; and, in fact, hypertrophy must in general be an inflammatory complaint. Excessive nourishment implies an excessive quantity of blood going to the part,—an excessive action throughout; and therefore one must suppose that it is, more or less, of an inflammatory nature. I will not say it is *inflammation*; but still it appears to me to be of an *inflammatory character*.

Sometimes this morbid nourishment, thickening, and increased substance of the heart, does not arise from an inflammation of the pericardium, and does not follow it; but supervenes on an obstruction to the exit of the blood, from the particular part which is so overgrown. You are aware, with regard to the voluntary muscles, that if any one, or any set of them, be particularly used, it grows; and acquires a larger size than it had before. So, in the case of the

heart, if, from an obstruction existing at the mouth of the aorta, it is obliged to make very great efforts to overcome the obstruction, constant palpitation results, and hypertrophy at last takes place. That is *one* cause of hypertrophy; but it is by no means the *general* cause. Sometimes an obstruction is not followed by any increase of substance. The heart makes what efforts it can; but does not come hypertrophied.

That part of the heart which is more frequently hypertrophied,—over-nourished, than any other, is the left ventricle; or rather the *walls* of the left ventricle. This agrees with the general fact, of disease being more frequent on the *left* side than on the *right*; but the *ventricle* of the left side is far more frequently hypertrophied, than the left *auricle*. When the left ventricle is hypertrophied, it is generally firmer than it should be, and likewise redder; but there is a great variety as to the dimensions of the cavity. If the walls be hypertrophied, and the cavity remain of its natural dimensions, this is called *simple* hypertrophy. The walls have become thicker than they should be; but the cavity is not diminished. Sometimes the cavity is *decreased*. The increase of substance has taken place inwards; so that you have the heart thicker than it should be, and the cavity either correspondingly, or at least in some degree, diminished. This is called *concentric* hypertrophy. Sometimes, however, the opposite to this occurs. The cavity is *enlarged*; so that while the heart is over-nourished, the cavities are dilated; and this is called *eccentric* hypertrophy. Thus we have three descriptions of hypertrophy; one, where the cavity remains of its natural dimensions,—*simple* hypertrophy; another, where it is diminished,—*concentric* hypertrophy; and another, in which the cavity is enlarged,—*eccentric* hypertrophy.

You will perceive, on a moment's reflection, that you may have a great addition to the substance of the heart, and that yet the organ may be neither harder nor thicker than natural; because it may be a case of *eccentric* hypertrophy. If the cavity be greatly dilated, all the additional substance (it may be) is only just sufficient to counterbalance the thinness which would otherwise take place. If a part be not over-nourished, but greatly dilated, it grows thinner and thinner in proportion as it is stretched; but if, while it is being dilated, a great addition of substance is made to it, it may lose none of its thickness. Thus, you perceive, there may be a case of great addition to the walls of the heart; while yet there may be no increased thickness. There is dilatation; and that dilatation, of itself, would tend to make the heart thinner; and the additional substance may be only just sufficient to counterbalance it; and therefore, in giving a diagnosis that the patient is labouring under hypertrophy of the heart, it does not follow that you are wrong if, after death, the heart proves to be no thicker than natural. If, notwithstanding an enormous dilatation, the heart retains its regular substance, it is to all intents and purposes *hypertrophy*.

The thickness which the heart occasionally attains, in this disease, is very great. Sometimes it is not merely double, but treble

its natural thickness. It is said that the natural thickness of the left ventricle in an adult, is about half an inch. Of course there is some variety in this respect. I have not noticed the remark anywhere; but I think we ought not to consider that a heart has been thickened during life, merely from observing that the walls are thicker than they ought to be after death; and for this reason: if a part contracts very powerfully at the time of death, and remains in a state of contraction afterwards, of course it will appear thicker. You know that when any muscle contracts, what it loses in length it gains in breadth, —in circumference. So, if the heart contract very violently, of course it will become thicker; and that thickness may be perfectly independent of any additional substance. But it stands to reason that, in proportion as it looks thicker, the external size ought to be less; and therefore, whenever you see a heart with its walls very thick, and perceive that the external part of the organ is small, I see no reason to consider that there was hypertrophy during life. I presume that what it has lost in *bulk*, it has gained in *thickness*; and that it is the mere contraction which has given rise to the apparently increased thickness of the walls. At a post mortem examination, you sometimes see the heart very small; but on making a section of the organ, you find that the smallness of bulk is proportionate to the thickness of the parieties; and therefore, in order to say that the heart is hypertrophied, you should not be contented with seeing that it is thicker than natural; but you should also find that the external bulk is of the natural size; otherwise you may be continually deceived. A very violent action may take place in the left ventricle at death, and may increase its thickness considerably; but in the same proportion will it lose in breadth.

I had better speak of the left ventricle first; because it is so much more frequently the seat of hypertrophy than any other part. In *simple* hypertrophy, — that is to say, where the cavity is neither increased nor diminished,—and in *eccentric* hypertrophy,—where there is dilatation as well as increased thickness,—the deposition is most frequent about the base of the heart. In the other kind (*concentric* hypertrophy), where the cavity is much diminished, and at the same time the heart is thickened, the addition of substance is the same throughout. The cavity is diminished in all directions; and the increase of substance is as great at the apex as at the base. When the left ventricle is hypertrophied, you will find the septum particularly thickened; and the columnæ carneæ will be double their natural size. If there be any *dilatation*, as well as hypertrophy of the left ventricle, the *right* ventricle (remaining healthy) looks, I was going to say, like a mere little side-pocket. It is quite small, and rather behind the *left* ventricle;—not reaching perhaps more than half way down the heart.

I need not remind you, that the walls of the *left* ventricle are far thicker than those of the *right*; and therefore the case must not be immediately set down as one of hypertrophy, on account of the disproportion between the ventricles. It is well to remember, too, what

is the usual size of the heart. It varies in individuals,—like the face, and limbs, and every other part of the body; but it has generally been supposed, that it bears a proportion to the fist of the individual. So it is said; but this is a mere rough estimate; because a labouring man will have a proportionably larger fist than a very fine gentleman;—arising from the more frequent employment of his hand. Still, however, as a general rule, you may say that the heart bears a certain proportion to the fist of the individual;—that it is about the size of the fist in different ages; but, in a diseased state, it will sometimes be even four times larger than that. Another circumstance must also be remembered; which is, that the walls of the *left* ventricle are not merely thicker than those of the right; but that they are proportionably thicker in *infancy* than in *after life*. You might very readily mistake a case of hypertrophy in infants, unless you were apprised of this circumstance.* Although the substance of the heart, in hypertrophy, is generally firmer than usual, yet sometimes it is only of its natural firmness, and occasionally it is softened; but this is toward the latter stages only. The thickening of the walls is not always uniform. Occasionally you will see one part of the walls much thicker than another.

Next to the *left* ventricle, comes the *right* ventricle, in point of frequency of hypertrophy. With regard to the *auricles*, as they are more delicate and thin than the ventricles, their disease is usually *dilatation*. You will continually find the auricles *dilated*; but rarely *hypertrophied*; whereas the *left ventricle* is every day hypertrophied; and every day it is both hypertrophied and dilated. If it so happen that the heart is both hypertrophied and dilated,—that is, if it is increased in thickness, as well as dilated,—there must, of course, be an enormous addition of substance. If the walls be increased in thickness, and the cavity be also dilated, you may imagine that the quantity of additional substance is enormous; because there is dilatation, which has a tendency to thin; and yet the walls not only maintain their natural size, but even exceed it. If both ventricles be hypertrophied and dilated, then you have an enormous heart;—it attains a frightful size. In this latter case, the heart acquires a roundish form;—the apex being lost, or nearly so.

Hypertrophy, I believe, is sometimes cured. Being in general of an inflammatory nature, it is sometimes, by antiphlogistic regimen and treatment, altogether removed. Of course, in such cases, there

* The following succinct account of various anatomical particulars respecting the Heart, will prove useful, as being easily retained in the memory. It is taken from page 25 of Dr. Elliotson's work:—"It is, in general, said that the heart is naturally about the size of the fist of the individual; that the walls of the *left* ventricle are *twice* as thick as those of the *right*, and in infancy and old age *four times* as thick; but that the columnæ carneæ of the *left*, are less voluminous than those of the *right*, though the *surface* of the left presents a more delicate and intricate reticulation; that when the two ventricles are cut into, the *left* should remain open, but the *right* fall together; and that the *capacity* of the two ventricles is *equal*."

has been no particular tendency to organic disease; and the person has been well treated.

In the case of dilatation, where that is the only thing observable, the heart is generally softened; and where the dilatation is combined with hypertrophy, but bears a great proportion to it, then the heart is generally soft. Dilatation sometimes arises from obstruction. It is not an inflammatory affection; but, from mere obstruction, one cavity or more dilates. Sometimes it would appear to arise from a mere softening of the part; so that the latter gradually gives way. The dilatation is sometimes attended with such remarkable softening, that one cannot ascribe it to any thing else, but a morbid softness of the heart.

The auricles are not only far more frequently dilated than the ventricles, but there is every reason to suppose they are often *temporarily* dilated;—that where an obstruction of a temporary nature exists, they become dilated; and that when that is removed they go down again; —they re-acquire their natural size. The reason for supposing this is, that when the auricles have been much dilated, there has been a dull sound, to a great extent, at the upper part; and when that has been removed, the natural sound on percussion has been heard again. Such cases of temporary obstruction sometimes occur in the lungs. In chronic bronchitis, and other diseases of the lungs, there will occasionally be such congestion, that the blood does not get out readily. This is sometimes the case in the auricles; and when it is removed by nature or art, the signs of dilatation have disappeared again. Dilatation of the *auricles*, it would appear, is by no means a dangerous thing, and is frequently removed;—not being a matter of very great importance. But as to dilatation of the *ventricles*, I should think that they seldom re-acquire their natural size when they have been dilated. Dilatation of the ventricles usually arises from obstruction at the mouth of the aorta, or some where else, or from a softness of the heart; and of course an obstruction in the heart, of an organic nature, cannot be removed, although you may *lessen* it; and as to softness of the heart, I cannot think it has often been removed, though I have reason to think that it has *sometimes*. I have seen *symptoms* of dilatation of the ventricle give way, when the person acquired strength; but I dare not say that the ventricle was actually dilated, and was really used.

With respect to dilatation of the heart, Bertin mentions three varieties;—just as there are three varieties of hypertrophy. The three varieties of hypertrophy are, first, where there is dilatation of the left ventricle; secondly, where there is a diminution of the cavity; and, thirdly, where there is no change in it. So, in dilatation, there is, first, dilatation *without* any increased thickness of the walls; secondly, dilatation *with* increased thickness of the walls; and, thirdly, dilatation with *thinness* of the walls. A morbid thickness of the walls, is the same thing as concentric hypertrophy. Dilatation *without* an increased thickness of the walls,—the walls being in the same

state as in health,—would only be *eccentric* hypertrophy; because there must have been an addition of substance to the enlarged ventricle, to have prevented its losing a part of its thickness. Dilatation with *thinness* (which is the third variety) has nothing to do with hypertrophy; yet, I think, it is possible for us to be right in saying, that there is hypertrophy even when the walls are thinner than usual; and that is when there is great dilatation,—much greater than the loss of thickness; because the dilatation and the loss of thickness should be proportionate to each other, if there were no additional substance; but if the former be very great, and the latter by no means considerable, then there must have been additional substance deposited.

We will now consider the signs of hypertrophy. The sign which is most noticed by people who do not employ the ear or the stethoscope, is palpitation,—violent action of the heart. You will find in this affection, as in palpitation from most other causes, that the patient lies most easily on his back, or on his right side. The palpitation is felt much more when he lies on the *left* side, than when he lies on the *right*. I do not mean that the heart beats harder; but the palpitation is a source of greater inconvenience to the patient. You will find this to be the general rule. The exceptions are where there is some other cause operating, particularly on the right side. In general, in simple affections of the heart itself, attended with palpitation, the patient lies best on the right side. The heart is then not so near the ribs, as when the patient lies on the left side; and therefore it does not disturb the patient so much. Another symptom is difficulty of breathing, and the least motion makes the patient worse in this respect. Going up a slight ascent, or walking fast, will in a moment cause the patient to be out of breath, in a remarkable manner; so that when you hear a patient say he is out of breath when moving about, you should suspect disease of the heart; and should investigate immediately, to ascertain if it be the case;—so common is it. Then there is, very frequently, uneasiness in the side, and even sharp pain. Hypertrophy is so generally an inflammatory complaint, that the patients continually have pain in the region of the heart. This pain may have passed off before you see the patient; but originally, if not during the whole course of the disease, there is more or less pain in the cardiac region. Besides these symptoms, there is very frequently a disturbed pulse; the pulse is generally quicker than it ought to be, and in many cases it is likewise stronger. Frequently, too, there is dropsy; and the force of the heart is such as to cause headache; and if the vessels of the head are weak, it will cause apoplexy, vertigo, and a throbbing of the temples and neck.

But none of these symptoms are to be depended upon alone. You may have dropsy and palpitation without disease of the heart,—merely from its functions being disturbed. You may have a very violent pulse, and strong palpitation, without any structural disease of the heart,—from a mere general irritability of the whole system; and you may have dyspnœa also. When the heart is disposed to

beat violently,—whether from structural disease or not,—you will have dyspnœa and palpitation. Again, as the walls of the heart may be much thickened, the pulse may be rendered small; because the cavity of the left ventricle is diminished. In the case of concentric hypertrophy,—where the cavity is decreased,—so little blood is sent forth at every stroke of the heart, that there is not enough to cause a good pulse. The heart may beat violently; but so little blood is sent out, that the arteries are not well distended; and hence you have great hypertrophy, and a small pulse. Again,—you may have great hypertrophy of the left ventricle, and great dilatation;—an immense mass of muscular substance;—so that the cavity is very much increased; and yet there may be a small pulse, in consequence of the aortic valves being diseased. Thus you may have a small pulse from two causes;—from the cavity being so reduced, that although the heart acts violently, there is little blood to go out; or from the opening being so reduced, that while there is plenty of blood, there is but little room for it to escape.

The great means of making the diagnosis, is by the application of the stethoscope. When any part of the heart is hypertrophied, you have a strong impulse at that part. As I have observed before, it is generally the left ventricle that is hypertrophied; and, therefore, if you place the stethoscope in that situation, the impulse drives the instrument against your ear at every stroke; and if you remove your head, you perceive that the instrument is jerked. By the "cardiac region," you are aware, is meant the lower third of the sternum, and the cartilages of the fourth, fifth, sixth, and seventh ribs. The heart lies behind those parts. Generally, in health, the left ventricle lies behind the cartilages of the fourth, fifth, sixth, and seventh ribs of the left side; and the right ventricle and auricle under, and behind the lower third of the sternum; so that if there be a very strong impulse at the ribs, without a corresponding impulse any where else, and this is pretty constant, you would infer that it is a case of hypertrophy of the left ventricle; but if the impulse be behind the lower third of the sternum, you would then consider it hypertrophy of the *right* ventricle. Occasionally the *auricles* are in a state of hypertrophy; but that is very rare;—their disease generally being dilatation; and if ever they are hypertrophied, I believe they are almost always dilated at the same time. If there be hypertrophy of the auricles, it is eccentric;—that is to say, they are dilated and thickened also. But usually they are not thickened at all; so that the disease is mere dilatation. It is in the *upper* part of the region I have now mentioned, that you would expect a strong impulse, or any thing else that is morbid, if the *auricles* be diseased; whereas, it is at the *lower* part that you must expect any thing morbid, if the *ventricles* are the parts affected;—the auricles being, as every one knows, at the top of the ventricles;—at the higher part of the cardiac region.

There is no morbid sound from simple hypertrophy. Even the natural sound of the heart is diminished. If it be a case of simple

hypertrophy, or hypertrophy out of proportion to the dilatation, you may have a violent impulse; but the sound of the heart is generally lost. It is a dead thump; as though a muffled sledge-hammer had struck against the chest from within. In a case of palpitation from a nervous cause, you will find both ventricles of the heart thumping hard together; and the sound is rather increased than not. The heart acts sharply; and if there be any alteration in sound, it is louder than usual. But in a case of *hypertrophy*, the impulse is great, but it is confined to the part; and the natural sound is *diminished*. If you attend to this, and take into account the general symptoms I have mentioned, you can seldom make a false diagnosis. If you take the general symptoms only, you may be deceived; but when, in addition to these, you find symptoms in the heart itself, you cannot be mistaken. Many cases of palpitation are called disease of the heart; but if you listen with the stethoscope, and find the impulse is only in one region,—that of the right or the left ventricle,—no mistake can arise. Now and then *both* ventricles are hypertrophied; but then you have no strong impulse higher up than the situation of the auricles. Generally, however, it is the left ventricle only that is affected; and if the *right* be diseased, the *left* usually suffers with it.

With respect to *dilatation*, it is just the reverse. There is *no* increased impulse; but there is an increase of *sound*. When one of the cavities of the heart is *dilated*, the sound is *increased*. It is not in general a preternatural sound. It *may* be so; but this does not arise as a matter of necessity. The natural sound becomes clearer and louder; but there is no additional impulse. Supposing, however, that the case is one of dilatation and hypertrophy combined, you then have both signs united;—you have a great impulse, and an increase of sound. This is the case, provided the hypertrophy and dilatation are proportionate; but if the former be much greater than the latter, then you have a great *impulse*, but *no* increase of sound. If, however, there be great dilatation and very little hypertrophy, then you have a great increase of sound. As you may suppose, where hypertrophy and dilatation take place together, and the hypertrophy is such as to thicken the part, the impulse and the sound are very great. Indeed, the impulse is dreadful. It causes the carotids, and all the arteries in the head, to throb; so that the patient is tormented by a continual pain in the head, and is unable to lie down. He is obliged to keep his head erect, on account of the violent throbbing. In these cases, on account of the enormous increase of the muscular substance of the heart, you have a strong pulse. In very intense cases, you will see the head jerk, at every impulse of the heart.

You must bear in mind the circumstance which I before mentioned;—that when the left ventricle is hypertrophied and dilated together, it does not remain in its natural situation. Its natural situation is filled by it, as it was before; but it extends much more to the right side, so that it will entirely occupy the place of the *right*

ventricle. In such a case, you will have a hard thump in the situation of the left ventricle; but you will also have it farther to the left, and even behind; and you will also have the impulse of the left ventricle under the sternum, in the situation of the *right*;—so that you would think the *right* ventricle was dilated and hypertrophied also; but you find, from the strong impulse in all the arteries, and likewise in the situation of the left ventricle, that it is the latter which is diseased. When the *right* ventricle is hypertrophied and dilated, the impulse does not extend to the *left* side; and, therefore, when you find a great impulse in the situation both of the *left* and of the *right* ventricle, you may infer that the thumping on the right side, depends on the left ventricle.

When the heart is dilated, you have another symptom. From its occupying so much of the space that ought to be occupied by the lungs, you have a dull sound to a very great extent. In most persons in health, when you strike on the cartilages of the fourth, fifth, sixth, and seventh ribs, there is a duller sound there than anywhere else; but if the heart be hypertrophied and dilated, then you have the extent of dull sound much increased. It stands to reason, that whenever a part is dilated,—whether it be the auricle above or the right ventricle or the left ventricle below,—you will have a dull sound over the part; because there is a solid substance there, where it ought not to be; and in the case of great dilatation of the left ventricle, with hypertrophy, you have a dull sound to a very great extent. The same circumstance would arise from a collection of fluid in the pleura; but when you see symptoms of hypertrophy and dilatation,—great impulse of the heart, and the symptoms I have now mentioned,—you may infer that the extent of dull sound arises from the great dilatation of the part.

In the great majority of cases, the symptoms of hypertrophy are in the region of the left ventricle;—that is to say, at the cartilages of the fourth, fifth, sixth, and seventh ribs, on the left side, more to the left still, and under the sternum. The impulse is very considerable; and the pulse is sharp, and for the most part full and strong. Just as, in the case of a bellows-sound,—when there is an obstruction in any of the openings,—it is (more frequently than not) at the mouth of the aorta; so, in examining the heart, it is well always to begin with the left ventricle; because, in nine cases out of ten, or nineteen out of twenty, the disease is situated there. So, again, in a case of consumption, it is well to commence an examination under the clavicles; because phthisis usually commences there.

In *dilatation* of the left ventricle,—whether accompanied by hypertrophy or not,—it is not an uncommon occurrence to hear a bellows-sound; because, although the opening be not at all diminished, yet the cavity is increased; and where the cavity is dilated enormously, it sends forth such a volume of blood towards the opening, that the latter is not capable of letting it pass; and therefore an obstruction is felt. I presume a bellows-sound would arise from the dilatation of any other cavity, if the opening were not dilated also. In hyper-

trophy, *without* such dilatation, there is a bellows-sound,—from the position of the heart being altered a little; and sometimes from the columnæ carneæ, towards the opening, being hypertrophied;—so as to form a little obstruction. But the great symptom of *hypertrophy*, is violent *impulse*; and the great symptom of *dilatation*, is an increase of *sound*,—not a *preternatural* sound. The sign of *obstruction* (whatever the *cause* may be) is a *preternatural* sound; but that merely shews obstruction,—nothing else.

There is another thing to be remembered; which is, that if you examine a person near to the close of his disease, you may find very few of the symptoms present. If a person be near death, although the heart may be greatly hypertrophied, yet it may have so lost its power, that it can act with only very little force; and the symptoms of hypertrophy may have diminished so much, that you would hardly suspect how violent a disease the individual has had, and is dying of. So it is with respect to the bellows-sound. It will diminish before death; because, although the opening has been too narrow, yet the heart having lost its power, sends forth so little blood towards the opening, that it escapes better than before. So, too, in disease of the heart, if you were called in just before death, you really might not be able, sometimes, to make an accurate diagnosis. The heart having lost its power, the patient does not appear so much under the influence of his disease, as he did before.

With regard to the treatment of hypertrophy of the heart, I have no doubt at all that it may sometimes be cured. You find the heart (as I mentioned before) evidently in an inflammatory state. The organ, for the most part, toward the close of the disease, is not only firmer and harder than it should be, but likewise redder; and frequently there is pain in the region of the heart, and even pericarditis also. Now if you make a person live on low diet,—if you cup repeatedly over the heart, keep him perfectly still, and relieve the bowels when it appears requisite,—so that there shall be no congestion anywhere; and if you exhibit colchicum, perhaps digitalis, and sometimes mercury, if he can bear it;—you will then see the symptoms of hypertrophy gradually decline. I have certainly known several cases,—where I had every reason to believe that the hypertrophy was very great,—in which abstinence from meat, spirits, and things of that description,—abstinence from mental excitement,—abstinence from every occupation of mind which could cause anxiety,—abstinence from exercise, and every circumstance that could quicken the pulse,—was followed by a decline of the symptoms; and the patient became comparatively well. This, however, requires a long time; and after the patient appears quite well, he must persevere in the general plan, though it need not be very assiduously carried on.

Local bleeding, for the most part, answers better than general bleeding. It is not very safe, in chronic diseases of the heart, to bleed at the arm; for, now and then, patients will fall into a state of syncope; and it is a dangerous thing, in diseases of the heart, to bleed to syncope. We have all heard of cases, where a patient with

diseased heart has lost more blood than was intended; so that faintness was produced by the abstraction, even of a couple of ounces, and the individual has died. A remarkable instance of this kind happened, within the last two years. A distinguished personage, labouring under disease of the heart, was bled at the arm. The bandage slipped; and although it is said that only a few ounces escaped, yet he fainted and died. It is more safe, therefore, to take blood from the region of the heart itself, by means of cupping or repeated leeches, than to bleed at the arm; for it is dangerous to induce syncope. If you do bleed generally,—as you often may, with perfect safety, when the patient is strong and hearty,—it should not be to the extent of syncope; because patients with diseased heart will sometimes die suddenly. Indeed, it is not an uncommon occurrence; and they die, more frequently than not, through syncope.

In the case of *dilatation*, the heart is generally found soft, and paler than natural. Dilatation may arise from an obstruction at the mouth of the aorta, or at the mitral valve; but more frequently than not, this disease depends upon debility; and therefore the heart is usually found soft. When a deposition has taken place outwards, you may find the organ firmer than natural; but in a case of simple dilatation, or dilatation with hypertrophy, after it has existed some time, the reverse takes place.

Active measures are not required in such a case as this. You have merely to bleed locally, in order to take off the congestion;—to keep an open state of the bowels; and to enjoin rest. Very frequently, however, tonics are required. If you find the pulse soft and feeble, it would be dangerous to take away blood;—the only object of venesection being to remove congestion. Leeches applied to the anus, frequently answer a good purpose, in such cases; but, for the most part, a strong evacuation is not at all required. When, however, there is dilatation, there is (much more frequently than not) hypertrophy, and a disposition to dropsy. From the dilatation, the blood is not sent out so freely as it ought to be; and consequently there is an accumulation, and a tendency to morbid secretion in the cellular membrane, and in the serous cavities; so that great congestion takes place in the liver, and likewise in the head; and there is also a tendency to general effusion. Such being the case, you will find it of very great use to give diuretics; and a combination of three or four, as I formerly mentioned, is best. Squills, digitalis, and acetate of potash, answer very well. In fact, I do not know anything so good. They answer far better than hydrogogue purgatives. You will see patients very much relieved by measures of that description; but if the patient be at all weak, you will find it serviceable to give iron; and I believe the best preparation is the tartrate;* because, in conjunction with other means, it has a tendency to increase the flow of urine, and the discharge from the bowels. I have seen patients with every symptom of dilatation of the heart, lose the greater part of these symptoms, and be able to

* Now called *Ferri Potassio-Tartras.*

go about, after taking the tartrate of iron. As I formerly mentioned, it may be given in large doses. In fact, instead of a few grains, you may give a drachm, or even two drachms, twice or thrice a-day; but still you cannot give it in such large quantities as the carbonate; because it is apt to purge and to pinch;—to do something more than carbonate or oxide of iron.* You will find many persons who cannot take more than a drachm. When it is mixed with treacle, it opens the bowels, causes an increased flow of urine, and strengthens the patient. If it should purge too much, it is a good plan to mix an equal part of the carbonate with it.

In such cases, I should give this tonic in preference to all others; because I know from experience that it answers so much better than they do. You will see many cases of hypertrophy with dilatation, where the patients are in a state of anæmia,—in a leucophlegmatic condition; and if you take blood away, you find it watery, and you make the patient worse. When patients are in a state of anæmia induced by bloodletting, or in that peculiar state in which the blood is not properly manufactured, the pulse will become sharp; and so, in disease of the heart, you will sometimes have a sharp pulse, with great debility of the patient. Whenever I have seen this condition united with disease of the heart, I have abstained from evacuations, and given preparations of iron; and have found the patients improve. But if you notice a tendency to effusion, as shown in the ankles, or if you hear mucous or other rattles in the bronchia, you will find diuretics of essential service. If there be general paleness and debility, then iron is one of the best things that can be given; and if the debility be very great, while you give diuretics, you should exhibit the tartrate of iron; which is both a diuretic and a tonic. With such treatment as this, it is wonderful how much good may be done. You may certainly cure some cases; and even where the affection is very severe, so that a cure is out of the question, you may still do a certain portion of good;—you may make the patient feel better than before, and may prolong life. It is our business to protract life, whether it be desirable for the patient or not. It is our business to act upon a general rule, and endeavour to prolong life; without considering, for a moment, whether the individual would be better *out* of the world than *in* it. If you treat all these cases antiphlogistically, you may do harm. When there is a state of anæmia, the adoption of such measures would be madness. The administration of iron, and even good nourishment, is then the proper treatment.

ANEURISM OF THE HEART.

Occasionally it happens that dilatation of the heart is partial. I do not mean that it affects only one particular cavity; but that it affects only a particular *part*, or particular *parts* of cavities. This disease is, properly speaking, aneurism of the heart. You are aware that if only a particular spot in the whole circumference of an artery is dilated, so that a pouch is formed, it is termed *aneurism*.

* Now called *Ferri Sesquioxydum*.

Occasionally all the coats dilate together at one particular spot, and form a pouch; and occasionally the inner and middle coats only are destroyed; but, in both cases, it is called "aneurism."

Now the same thing will occasionally happen in the case of the heart. There will be dilatation at one particular spot. The word "*aneurism*" was formerly misapplied with respect to the heart; for a dilatation of the whole cavity received that appellation. You will find that, in some books, dilatation of the left ventricle is called "aneurism." If there was dilatation with *thinness*, it was called *passive* aneurism; if there was increased *thickness* united with the dilatation, then it was called *active* aneurism. These expressions ought now to be dropped; but you will find them employed, in this way, in Corvisart's work on Diseases of the Heart; which, at the time it was published, was a very good one. You will find a case of *true* aneurism of the heart,—or dilatation at one spot, so as to form a pouch,—mentioned by Dr. Baillie; and several instances of it have now been collected. Like all other diseases of the heart, it occurs more frequently on the *left* side than on the *right*; and principally on the left *ventricle*. Aneurism is, in itself, a disease of the *arteries;* and therefore there is strong reason for presuming beforehand, that aneurism of the heart would take place on the *arterial* side of the organ. I am not aware that any instance has been known, of the disease occurring in the right ventricle. I believe that, in every case upon record, you will find that it took place in the left. In my work on Diseases of the Heart, I have referred to every case of this disease that I could find upon record, up to the time I published.* The affection occurred once in a patient of my own.

You are aware that aneurism of the arteries occurs much more frequently in *males*, than in *females*; and that is the case with the disease under consideration. In fact, I know of only one instance on record, in which it occurred in a female. The situation of it in the left ventricle is various. In some cases, the pouch has been at the *apex* of the ventricle; and in others,—quite as numerous,—it has been at the *base*. Sometimes it has been found *between* the apex and the base.

The symptoms of the disease are not known. In the case under my care, I had no idea of the man's affection; I only felt satisfied that he had disease of the heart. At one time I thought it was upon the *right* side; and at another on the *left*. As the disease increased, it extended; and did not remain in its original spot. Dr. Baillie says, that the symptoms are similar to those which characterize aneurism of the arch of the aorta; but that is saying nothing; because the symptoms of the latter affection are dyspnœa, and more or less pain at the spot; but a thousand things will give rise to those circumstances. Dr. Baillie says, that the pulse is irregular; but he adds that it is often *regular*; and therefore that also amounts to nothing. In such a case, you will *usually* discover that the person

* These cases will be found in the Appendix, No. IX.

has disease of the heart, but not *always*; because the affection has occurred in individuals, in whom disease of the heart has not been suspected. Once I met with this affection in the left *auricle*; but I have never seen such a case on record. I lately saw, in some museum, a preparation of this description. In the case I met with myself, the left auricle was dilated into a pouch; and the pouch was lined with layers of fibrin;—exactly like aneurism of the aorta. It was not a mere coagulum; for the fibrin was organized. In this case, also, I had no idea of the man's disease. I knew that he had disease of the heart, and I thought it was dilatation of the *ventricle*; but as to this particular affection of the *auricle*, I confess I knew nothing about it. Whether I should now be able to discover this disease in any way, I cannot tell; but I should think I could not, even though I have had longer experience.

In aneurism of the left ventricle, the pouch is sometimes lined by a smooth membrane, and sometimes not; and therefore aneurism of the *heart*, follows the exact rule of aneurism of the *aorta*. You are aware that, in the latter, the inner coat is sometimes not injured at all; but that the three coats are all dilated together at one spot; so that you find the pouch lined by a smooth membrane. Sometimes mere pouches are formed in the heart;—a mere dilatation has existed; and sometimes you will find no lining membrane at all;—the inner membrane of the heart having been destroyed. The heart, then, is subject to aneurism, both true and false;—exactly like the arteries; but instances of the disease are very rare.

INDURATION AND SOFTENING OF THE HEART.

With regard to *induration* and softening of the heart, I may remark that sometimes, when the organ is hypertrophied, it is indurated, and sometimes I have seen induration *without* hypertrophy. When the heart is softened, it is *generally* dilated; but this is not *always* the case. If the softening, however, have existed long before death, I cannot but suppose that dilatation must be the consequence. Induration, therefore, is rather allied to *hypertrophy* of the heart; and *softening* to *dilatation* of it. Hypertrophy is generally an inflammatory disease;—a disease, at any rate, of over-nourishment; and therefore you may suppose that the organ will, in time, become *firmer* than usual; whereas *dilatation* is rather a disease of *debility*; and therefore you may suppose that, in many such cases, the heart will be *soft*. Before death, however, a heart that is *hypertrophied* may become soft.

I do not know any particular symptoms of induration of the heart; but if it result from an inflammatory state, you may expect long-continued violent action of the heart, and a strong pulse. When the heart is softened, the pulse is generally feeble; and after death, there is frequently a quantity of bloody fluid found in the pericardium;—the softened condition of the organ having allowed the blood to exude from the vessels. Sometimes, when the heart is *indurated*, it is not redder than usual. On the contrary, it is rather

pale; and this is sometimes the case when it is *softened.* In carditis, —true inflammation of the substance of the heart,—such congestion takes place, that the organ is dark-coloured; and usually it is soft.*

ABSCESSES AND ULCERATION OF THE HEART.

Occasionally we see abscesses in the heart; and I believe that, for the most part, they occur not very far from the pericardium outside, or the lining membrane within. It is said that they may occur in the middle of the substance of the heart; but I rather doubt that. I think they begin in the situation I have stated. Occasionally, ulceration is seen without an abscess. Of course, when an abscess exists, it may go on to ulceration; and may ulcerate through the pericardium, or through the lining membrane. But sometimes ulceration appears to begin in the lining membrane itself. At least, a little superficial ulceration is seen, without any collection of matter.†

* "With hypertrophy of the heart is generally united some degree of induration. Sometimes induration exists alone, or in great proportion to the hypertrophy. I believe it is attended by palpitation, a full and rather hard pulse, and frequently by pain in the heart. One must suppose it to be inflammatory.

"The substance of the heart is sometimes softened; and the pulse and action of the heart are then feeble and frequent; dropsy takes place, with a disposition to fainting; and the heart is also generally found dilated, and of a deeper or paler colour than usual. This state, though the opposite of induration, may, like it, be the result of inflammation; as softening of other organs, beyond all question, frequently is. Yet softening of the heart, and of all other parts, and even gangrene, probably may occur without inflammation; and sometimes, when it does occur with inflammation, the latter may not be the cause, but only one of the circumstances of a peculiar condition. Very *acute* inflammation of any part generally, I believe, induces a softened state; and though a softened state may also result from a *chronic* inflammation, the latter generally causes *induration.* This is seen with regard to the various muscles of the body, as well as in the various internal organs.

"Great as is the modern improvement in pathology from the knowledge that many diseases are essentially, or to a degree, inflammatory, which were formerly not so regarded, and great as is the improvement in medical practice by the adoption of antiphlogistic measures in such cases, I am satisfied that we are now rather too prone to believe affections nothing more than inflammation, and to treat them only as such;—that many so regarded are not at all inflammatory; or have inflammation, not as a fundamental state, but merely as one circumstance among the morbid actions; or really have inflammation as a *consequence*;—and that the hope of curing them by antiphlogistic measures alone is vain,—whatever relief may be effected by lessening the inflammation which accompanies them. The *deep-coloured* and the *pale* softening of the heart, distinguished by Laennec, occur (according to Bertin),—the former as an *acute,*—the latter as a *chronic* affection. The chronic is often an attendant upon general cachexy; the acute, on pericarditis. But, besides these *chronic* changes, true *acute* inflammation of the substance does occasionally occur."—*Elliotson on the Heart; page* 30.

† "Abscess and circumscribed ulceration are more frequently found than general softening. The ulceration may commence either in the living membrane of the heart, or in the pericardium. But whether the ulceration be the result of an abscess of the heart, or originate in one of these membranes, it may proceed to perforation; or to such attenuation that, on some sudden effort perhaps, rupture ensues."—*Dr. Elliotson on Diseases of the Heart; page* 30.

RUPTURE OF THE HEART.

When an abscess has proceeded to any extent, of course the heart is very likely to rupture; and therefore rupture of the heart has sometimes been seen after an abscess. Sometimes, however, the organ is ruptured without any abscess whatever; and without any particular deviation from a healthy structure,—unless it be softening. I never met but with one case of rupture of the heart; and in that instance the organ was very soft. It occurred in a gentleman who, I believe, was a proprietor of this University *;—a very respectable medical man in the neighbourhood, about sixty years of age, and corpulent. He had three attacks of pain about the præcordia, accompanied with dyspnœa and palpitation; but he had gone out in the intervals, as usual. One morning, however, a fourth attack of pain took place in the region of the heart; and he rang his bell for his assistant, who wished him to have a fomentation. The assistant left the room; the gentleman rang his bell violently; and before the assistant could get up to him, he was dead. On opening him, I found a zig-zag fissure in the front of the heart, in the left ventricle.†

The greater number of instances of this disease, have taken place towards the apex of the heart. It is the apex which is thin; and when the organ grows very thin, or very soft, rupture usually takes place there, or not very far from it. This accident occurs far more frequently in the left ventricle, than any where else; but it may occur in any part of the heart. Some persons have supposed that it *always* takes place in the *left* ventricle; but you will find instances of its occurring in the *right*. George the Second died of this affection.‡ He fell down, one morning, at Kensington. The sergeant-surgeon was sent for, and attempted to bleed him; but could not; and, on opening him, they found that the heart was ruptured, and

* The University of London;—now University College.

† "Harvey is said by Morgagni to have first noticed rupture of the heart. Abundant cases are on record of rupture of the heart, independently of ulceration; and are compared to rupture of the arteries, from violent muscular effort; though generally there is also a want of firmness in the organ. They may occur in every part, but usually happen in the left ventricle; where the most forcible muscular contraction takes place; and a spot too thin, or that is soft or ulcerated, is most likely to occur, and is most exposed to violence, if the heart be made to act forcibly by mental or by muscular causes. It is the apex or its vicinity,—naturally the thinnest part of the ventricle,—that usually gives way in general softness or thinness of the organ. Death is usually instantaneous; but sometimes does not happen for several hours;—differences also observed when the heart is wounded.

"While numerous instances of rupture of the *left* ventricle are on record, we have very few of rupture of the *right*. Yet George the Second perished suddenly of this accident, in 1760; and (what is very remarkable) the Princess of Brunswick, in 1730. Her case, no less than the celebrated one of George the Second, is referred to by Morgagni."—*Dr. Elliotson on Diseases of the Heart; pages* 30 *and* 31.

‡ Some interesting particulars relative to the death of this monarch, extracted from Dr. Elliotson's work on Diseases of the Heart, will be found in the Appendix, No. X.

had let forth a quantity of blood. It is rather singular, that one of the same family (the Princess of Brunswick) died, twenty years before, of the same affection; and not only was there rupture of the heart, but the *situation* of the rupture was the right ventricle. I recollect being once asked, whether a person could mistake syncope for apoplexy; and I referred to the particular case of George the Second. His Majesty fell down senseless, and the sergeant-surgeon attempted to bleed him at once;—evidently presuming that it was a fit of apoplexy. Had he supposed the case to be one of syncope, he certainly would not have attempted to bleed him.

RUPTURE OF THE VALVES OF THE HEART.

Occasionally the valves give way suddenly. A valve has been torn under a very violent effort; and very distressing symptoms have taken place. Great pain has generally been felt; but if that be not present, great dyspnœa and great rapidity of pulse are observed—that is, if the rupture be extensive. If it take place slowly, there cannot be these sudden symptoms. Sometimes, from mere intensity of disease, the valves will become exceedingly fragile, or thin; and will give way without *any* effort;—just as the heart will do, from extreme softening. Sometimes, on the other hand, they will give way under a *violent* effort.* In one of the numbers of the "Medical Gazette," there is a very well marked case of rupture of the tricuspid valve; in which great rapidity and irregularity of the pulse took place, and (I presume) dyspnœa. The patient died six or seven days afterwards. Death does not always immediately ensue on rupture of the heart, when it arises from an internal cause. It *may* take place instantly, and generally does; but sometimes it does not take place for several hours. In the case of the valves, however, a patient may not only live several *hours*, but for several *days*; and, for what I know, a much longer period than that. A very slight degree of rupture of the valves, may only keep up a considerable irritation; and the patient may die from its ill effects, at a very distant period. One author mentions an instance, which occurred after a fall on the right side of the chest; and in which death did not take place for five months; yet it was found that an aortic valve

* "The valves alone sometimes suddenly give way; and I believe that immediate extreme dyspnœa, and rapidity of pulse, are the usual effects of an extensive injury of this kind. They split either from intensity of disease,—from mere fragility, or from some violent effort;—exactly the circumstances in which the inner, or inner and middle coats of an artery, frequently crack and give rise to aneurism. An engraving of a split aortic valve, is given in Dr. Baillie's work. I saw an instance in which the same valves were beset with grains of earth, and obstructed the course of the blood; when suddenly, without obvious cause, all the symptoms were aggravated, and the patient died in a few days. Two of the aortic valves were found rent. In the 'Medical Gazette' for the 20th of last June (1829), an instance of rupture of the tricuspid valve is described. The heart was variously diseased, but not particularly the tricuspid valve; and, during an exertion, a snap had been felt; immediate rapidity and irregularity of pulse had occurred; with syncope, and (I presume) dyspnœa; and the patient had died in six days."—*Elliotson on the Heart; page* 31.

was torn.* Sometimes, instead of the valves themselves, the cordæ tendineæ have been found ruptured.†

GANGRENE OF THE HEART.

I have never seen gangrene of the heart. Cases have been *supposed* to be gangrene of the heart; but I should imagine they were only instances of extreme congestion of blood; and had been mistaken, by uninformed persons, for gangrene.‡

OSSIFICATION OF THE HEART.

I mentioned that the pericardium, like other serous membranes, is sometimes ossified; but, generally speaking, I believe it is not the pericardium itself that has suffered this disease, but the subserous cellular membrane immediately below it;—as in the case of the pleura. But, now and then, this ossification has been very extensive; and in proportion to its extent has the muscular substance beneath been atrophied,—wasted away; and I believe this is the nature of those cases which have been called "ossification of the heart." Bone has been deposited under the pericardium, or perhaps under the lining membrane within; and the muscular substance has wasted;—so that the heart has been found little more than a shell. Mr. Burns, in his work on Diseases of the Heart, mentions an instance, where the ventricles were little more than shells of bone. He says that no one ever saw *complete* ossification. From the progress now made in morbid anatomy, I have no doubt that the foregoing are instances of a deposition of bone, external to the

* "If the rupture be not extensive, chronic disease results from the irritation of the laceration, and the imperfect function of the valve;—such chronic disease as hypertrophy of the substance of the heart, dilatation, or structural change of the valves themselves; and death does not occur for some time. Dr. Abercrombie mentions an instance in which, after a severe fall on the left side of the chest, death took place in five months; and an aortic valve was found torn at its base, so as to give the appearance of a ring; and the left ventricle was found hypertrophied and dilated. Morgagni found an aortic valve ruptured."—*Elliotson on the Heart; page* 31.

† "In all these instances of rupture of the valves and their attachments, there has generally existed some disease of the heart; and, most frequently, of the valve itself. But occasionally,—just as in rupture of the substance of the heart,—and of the middle and inner coats of the aorta, no diseased appearance is discernible; although one must suppose there is a morbid friability, at least, in those cases where no external force, no effort of voluntary muscles, nor any mental excitement,—some one of which is usually the cause of rupture,—takes place. I met with an instance of a circular hole in two aortic valves, on either side of the septum,—from original defective formation. Morgagni once found a hole in one of the leaves of the mitral valve."—*Elliotson on the Heart; page* 31.

‡ "I have not read of gangrene of the heart; but it has been seen soft and black (without any gangrenous smell), from excessive inflammatory congestion of blood; and Cruveilhier gives a view of a heart beset with black patches of congested blood;—similar to those observed in what is absurdly called 'apoplexy of the lungs.'"—*Elliotson on the Heart; page* 31.

muscular substance, and a wasting away of the muscular substance itself.*

It is a much more common occurrence to see the *coronary arteries* ossified. Indeed they are very frequently so. The most frequent situation of bone about the heart, is at the mitral valve, and the beginning of the aorta;—for we consider the beginning of the aorta as a part of the heart. Next to that, the most common situation of bone is in the coronary arteries.†

ANGINA PECTORIS.

It has been supposed that ossification of the coronary arteries,—or, at least, a degree of induration amounting to cartilage,—gives occasion to the symptoms called *angina pectoris.* By "angina pectoris" is meant a sudden violent pain, in some part of the chest near the heart, and especially at the sternum;—a pain which causes the patient to stand still if he be walking, and induces a sensation as if he were about to expire. The pain, at first, is felt only at one spot,—in the situation I have mentioned; but at length it extends to the shoulder, darts through to the spine, goes down the arm, and occurs at the end of the fingers. In general the pain is confined to the left side; though there are a few cases where it has extended to the *right* shoulder, and down the *right* arm, and even down the front of the loins; but that is usually after it has existed for some time, longer or shorter, at the sternum, and down the left arm. There is not necessarily palpitation; for you may have this affection without any palpitation at all. Dr. Haygarth, of Bath, has collected a vast number of cases of this description; and has inferred that these symptoms are characteristic of disease of the coronary arteries. He does not say "characteristic of *ossification,*" as some make him; but "characteristic of *disease* of those arteries;—whether it be induration, or the formation of cartilage, or of bone. But it is now ascertained, that angina pectoris does not characterize any particular affection of the heart. You may have it without ossification, or any perceptible disease of the coronary arteries; and, on the other hand, you will frequently find ossification of the coronary arteries, without the symptoms called "angina pectoris." You will find angina pectoris very well described by Dr. Heberden, in an early volume,—

* "The induration of the heart occasionally amounts to a cartilaginous or osseous state. But these changes are almost always originally seated in the living membrane of the pericardium, or in the subjacent cellular membrane. A spot of the heart or its membranes is sometimes so changed. Sometimes nearly a whole cavity becomes a horny case. Mr. Burns declares that he once saw, not only complete ossification of the pericardium, but also the ventricles ossified as firmly as the skull, except about an inch at their apex. The chordæ tendiniæ are occasionally ossified."—*Elliotson on the Heart; pages* 31 *and* 32.

† "The coronary arteries are sometimes ossified; and, not unfrequently, the kind of suffering denominated 'angina pectoris,' is the result. But they may be ossified without such a result; and angina pectoris may exist with various structural diseases of the heart, or without any."—*Elliotson on the Heart, page* 32.

the first or second I believe,—of the "Transactions of the College of Physicians." It is not one of the common symptoms of disease of the heart. In the greater number of instances in which the heart is diseased, in whatever way,—you have not the symptoms of angina pectoris; and although it is a fact, that you frequently have these symptoms when there is ossification of the coronary arteries, or great ossification of the mouth of the aorta; yet it is also a fact that you may have them in almost any disease of the heart whatever; and also that you may have them without any ossification at all.

Such symptoms, it is now well known, will take place without any disease of the heart. A few years ago, some cases were published, which were accurately described as angina pectoris; but in which no disease of the heart was found after death. The truth is, that gastrodynia (spasmodic pain of the stomach, I believe) frequently resembles this affection. The left side of the stomach is situated close to the heart; and a violent pain of the stomach, frequently shoots upwards. Frequently it will shoot as far as the shoulder; and even down the arm. Cases of pure spasmodic or neuralgic pain of the stomach, will give way to stramonium, prussic acid, and remedies of that description; and are shewn to be diseases of the stomach, not only by their ceasing entirely, on the exhibition of remedies calculated to relieve functional disorders of the stomach, but by acidity,—perhaps vomiting; and by various other symptoms, indicating disease of the *stomach*, and not of the *heart*. In such cases, I have known persons seized with a violent pain, when they have moved quickly;—just the same as when there has been disease of the heart itself. The heart is certainly subject to pain of a neuralgic character. I have seen several cases of persons who have had violent pain, at different times, in the region of the heart; and the difference between it and what is called "angina pectoris," I have found to be this;—that the latter is only felt when the patient moves about; whereas a neuralgic pain is felt, quite as severely, when the patient is sitting still. Frequently, too, there is pain darting in other distinct nerves of the body. The pain is of a stabbing character; and although it may be made worse by the patient jolting himself about, yet when he is perfectly still, it will frequently come on in the most violent way. Another diagnostic mark is, that neuralgia is not particularly disposed to dart through the left arm; nor is it attended with a dying sensation;—as though the individual were about to expire.

With regard to the symptoms called "angina pectoris," I have relieved them more by prussic acid, than by any other remedy. If there be organic disease of the heart, you cannot relieve it to the same extent, as you can a *neuralgic* affection of the organ; and I do not know that I ever did much good in such cases.

ATROPHY OF THE HEART.

The heart will sometimes waste away,—be atrophied; and then it generally looks pale and wrinkled; and is compared by Laennec to

a shrivelled apple. You will frequently find this to be the case in phthisis; but occasionally it occurs independently of that complaint. You are not, however, justified in saying that the heart is *atrophied*, because it is *small*; for it may have contracted; and you find that the walls are thick, in proportion as the organ is small. I mentioned that the walls being thick, is not sufficient to warrant you in saying that there is hypertrophy; for in order to constitute hypertrophy, there should be no diminution of bulk, to counterbalance the increased thickness. So, on the other hand, there is no reason to say that the heart is *wasted*, because it is *small*; for in order to constitute atrophy, there must be no increase of thickness to counterbalance the diminution of the cavity. Occasionally, the heart does not become smaller, when it is wasted. The bulk remains the same externally; but all the walls have become thin. The cavity has increased, in proportion as the walls have become thin; but there has been no increase of the external surface. This is an instance of atrophy;—just the same as when the whole bulk has been lessened together.*

MISCELLANEOUS DISEASES OF THE HEART.

There are certain other structural affections of the heart, not to be known by any particular signs. I have seen the substance of the heart apparently changed into fat. I recollect opening an individual, in whom there was merely a thin layer of muscular substance on the outside of the heart, and within; and when we had cut through these, the rest was all fat. The individual had laboured under great difficulty of breathing, dropsy, and acute attacks of syncope. The heart was not able to do its duty. He was known, for many years, to have disease of the heart; but no one could imagine the real nature of the disease. Stagnation of blood took place in various parts; and there was dropsy and fainting. You will find a few other instances of this affection, recorded in the "Dublin Hospital Reports," and the "Edinburgh Medical and Surgical Journal." This is different to those cases where fat is deposited *outside* the heart; for here the heart, to a greater or less extent, is *replaced* by fat.

* "Sometimes the heart wastes,—is atrophied;—becoming small and wrinkled. This is often, though not always, observed after chronic diseases; and especially after phthisis. Pressure by a pericardial effusion, or any other cause, has the same effects. The walls of an atrophied heart (it is said by Dr. Bertin) may be either thicker or thinner than usual, or may be of their usual dimensions;—their thinness being occasioned by dilatation, and their thickness by narrowing of the cavities. But it appears to me that, if the walls are thickened, we are not justified in pronouncing the smallness of the heart an *atrophy*; for the external smallness of dimensions may arise from violent contraction at death; and, if the walls are dilated, that we are not justified in calling the thinness *atrophy*; because the original quantity of substance may be in them, and only spread out. If the whole heart weigh less than is natural, then only, I think, we ought to say that the organ is atrophied; and, even then, the smallness of the organ may be an original defect;—unless, indeed, it appear wrinkled, like a shrivelled apple,—to use Laennec's comparison."—*Elliotson on the Heart, page* 32.

Occasionally the heart is *scrofulous*. I have seen scrofulous tubercular matter in its substance. The heart is said (though I have never seen it) to be sometimes in a *cancerous* condition. It will sometimes contain *cysts*; and, they say, even true *hydatids*. Sometimes the heart has *melanotic* deposits; but I have never seen that affection.

I once opened a very curious case. There were small globular cysts, each containing bloody fluid, and attached, by peduncles, to the inner surface of the heart. They did not hang into the cavity; but were situated between the columnæ carneæ, and were seen pressing the ventricle out. It is a singular circumstance, that it occurred in the individual in whom, for the first time in my life,—before I had heard of such a thing,—I found what is called "pulmonary apoplexy."*

On opening a heart, you will often find a large coagulum of fibrin,—pure fibrin;—the red particles being altogether separated. These coagula are called, in common language,—or, at least, *were* called,—*polypi*. We do well to get rid of such absurd names. This fibrin was supposed to have existed during life, and to have indicated great disease; but it is now known to be merely fibrin, separated from the red particles of the blood. Occasionally, however, this does exist during life; and I presume the mode of distinguishing it, will be to observe whether the coagula are organized, and adherent or not, to the substance of the heart. If you see that these coagula of fibrin are organized,—really vascular, and adherent to the sides of the heart,—not merely sticking among the columnæ carneæ, but attached by real adhesions,—then you may suppose that they existed during life. Instances have occurred, in which the symptoms were decidedly referrible to these coagula; where the course of the blood was obstructed, without any one knowing the reason why; and where a bellows-sound was heard; but after death a coagulum of fibrin was found adherent,—perfectly united to the substance of the heart. I once met with an instance, where a large portion of fibrin was adherent to the mitral valve;—just in the same way as an adhesion will exist between the pulmonary and the costal pleura.†

You see, therefore, that there are a great number of organic diseases of the heart, which give no sign to the ear; but while you have

* "I gave the dissection," says Dr. Elliotson, "in the 'Annals of Medicine and Surgery' for 1816. Laennec, therefore, *erroneously*, considered himself the first who described what he terms 'the globular excrescence;' and, indeed, he refers to numerous authors, for what appear to have been analagous formations." This case, so important in many respects, will be found in the Appendix, No. XI.

† "Although the greater part of the fibrinous coagula observed in the heart and large vessels, are produced after death, some are unquestionably produced during life; for they are occasionally organic, and adhere by vessels to the substance of the heart; and symptoms appear during life, evidently arising from obstruction to the course of the blood;—exactly as we find to be the case from the existence of organized coagula in arteries and veins, at a distance from the heart. Sudden paralysis of an extremity, attended by loss of pulse in it, and sometimes at length even by mortification, has frequently occurred from the production of coagula in arteries."—*Elliotson on the Heart; page* 33.

no right to say that there is *not* organic disease of the heart, I do not know that you are justified, in any case, in saying that there *is*. There is no sign of *scrofula* of the heart,—no sign of *cancer*,—no sign of *abscesses* in it. A number of changes, of a structural nature, may take place in the heart, and yet give no sign that the ear can appreciate; and may only disturb the functions of the organ in such a way, that you are almost at a loss to say whether there is *functional* or *structural* disease. One is never justified in saying to any individual, that he has *not* structural disease of the heart. You may say that the symptoms you observe do not *indicate* it; and you may say that *such* and *such* a structural disease does not exist; but you cannot affirm that there is no structural disease whatever.*

ANEURISM OF THE AORTA.

There is disease of another part which it is right to mention, as a part of the heart. It is situated in the chest, and is an affection of the ascending aorta,—particularly of the arch. These are parts which are very frequently diseased; and we have continually to make

* "Like various other parts of the body, the heart is subject to neuralgia. I had a case of this kind, where the pain was intense;—affecting not only the region of the heart; but darting to the shoulders and back;—sometimes dull and aching; at others, stabbing. It was not increased by motion or posture; and was unaccompanied by any stethoscopic signs. It occurred in a middle-aged woman at the Hospital [St. Thomas's]; and the symptoms were removed by iron; but afterwards, I believe, returned. A second case has occurred to me, in the person of a lady, who appears to have laboured under the disease very many years. Besides a constant aching in the lower part of the cardiac region, near the sternum, there are frequent stabbing pains,—plunging (to use the expression of most persons afflicted with neuralgia); so that she is compelled to rise and walk the room almost every night. These pains occur during both rest and motion; but most severely during motion. They shoot in all directions; and occasionally occur in distant nerves. As soon as they are over, she is apparently well; and, when they are not very troublesome, sings, dances, or takes horse-exercise. In the first case, the ear discovered nothing morbid in the heart. In this, a slight ventricular bellows-sound is heard. Andral mentions a dreadful case of this kind, which proved fatal, without leaving any trace of disease in the heart, or its dependencies.

"Upon the state of the heart which gives rise to a mixture of the venous and arterial blood,—the state termed *cyanosis*,—I have little to say. It is usually a congenital malformation; upon which subject the works of Dr. Farre and Mr. Burns together, leave nothing to be desired. I have seen the admixture rather suddenly begin to increase in adult age. Bertin believes that the admixture has occasionally commenced after birth, from an ulcer in the auricular or ventricular septum,—throwing the two corresponding cavities into one. In most cases, the right auriculo-ventricular, or ventricular-arterial opening, becomes narrowed; and the right auricle, or ventricle, or both, are dilated and hypertrophied; and the usual ill consequences of that affection are, sooner or later, experienced.

"Preternatural situation of the heart occasionally occurs;—sometimes congenitally, but oftener in consequence of the morbid presence of solid, liquid, or aeriform substances in the left cavity of the thorax,—pushing the heart to the right. The circumstance is by no means uncommon. Dr. Abercrombie mentions a case, in which the right lung had become solid; and the left, dilated extensively to perform the function of both, had pushed the heart to the right. Increased bulk of the heart itself, or pressure from other parts,—either above (as aortic aneurism), or abdominal enlargement below,—will likewise occasion other changes in the situation or direction of the heart."—*Elliotson on the Heart; page* 33.

a diagnosis between affections of them, and of the heart. The most common disease of the aorta, is aneurism, or dilatation. We continually find, on opening bodies, that while there is disease of the heart itself, there is disease of the aorta.* The inner surface is rough,—perhaps studded with a yellow opaque substance,—perhaps with bone; and frequently the inner coat is destroyed, here and there; so that there is rough bone, which the blood passes over. When a inner coat is destroyed, an appearance very much like ulceration is seen. You will sometimes see the inner surface of the aorta rough, like the bark of a tree.† There is no sign which will indicate this affection. It rarely exists alone; but is generally found united with disease of the left ventricle. Disease of the left ventricle will, however, exist without it; and it may take place independently of disease of the left ventricle.‡

The aorta, where it arises from the heart, is frequently dilated; and besides being dilated, it is frequently distended, at one spot or more, into a pouch; so that an aneurism exists. There is seldom an aneurism of the ascending aorta, without a dilatation;—that is to say, the whole circumference of the ascending aorta dilates in the

* "The lining membrane of the heart and aorta, is subject to inflammation; and sometimes simultaneously with the pericardium. In the case of the heart, I believe that the symptoms are increased general sound, force and frequency of action, with more or less pain or uneasiness. When the former symptoms continue for a length of time, without the peculiar auscultatory signs of organic disease, or proportionate pain on pressure, as observed in pericarditis,—we certainly may infer the existence of this inflammation. The lining membrane of the aorta is generally inflamed at the same time; and, when the affection extends along the descending portion, there is frequently a sense of smarting in the direction of the spine; together with a violent pulsation in the abdomen, not only of the aorta, but even of the iliacs; without any perceptible enlargement of the vessels, the existence of any tumour in the neighbourhood of the aorta, or such a smallness of any of the arteries, as might render it probable that the aorta was narrowed in any part, and thus forced into violent pulsation."—*Elliotson on the Heart; page* 33.

† "Of the intensely bright redness of the inner surface of the inflamed aorta, and the impossibility of ascribing it to anything but inflammation, I have elsewhere spoken; as well as of the occasional effusion of fibrin. It appears as a red stain; and sometimes the middle coat appears more loaded with blood than usual. But we far more frequently discover the *chronic* change of structure in this vessel; yellow spots are seen every day. Often a yellow curdy substance can be squeezed through the inner membrane under which it is deposited;—the membrane having become friable, and under distension giving it issue. Sometimes the deposition projects into the canal of the artery, like a tubercle. Frequently spots and patches of bone are seen here, and in contact with the blood. This bone I believe to have been originally deposited beneath the inner membrane; and to have become exposed by the cracking and destruction of this membrane. Sometimes all the coats are thickened and indurated. Ulceration is occasionally seen; and fatal hæmorrhage has thus been produced;—the attenuated outer coat (perhaps the only one remaining) giving way under some exertion, or strong action of the heart."—*Elliotson on the Heart; pages* 33 *and* 34.

‡ "Aortitis seems caused by all the circumstances which produce inflammatory affections of the heart, and perhaps by disease of the heart itself. Either hypertrophy of the left ventricle gives rise to inflammation of the aorta, or the converse happens, or they spring up together; for they are frequently conjoined."—*Elliotson on the Heart; page* 33.

first place; and then, in the midst of the dilated vessel, you see at one spot a pouch formed. Aneurism very rarely affects the ascending aorta, without the vessel having been first dilated.

Aneurism of the ascending aorta frequently exists without people being aware of it. They will fall down dead in a moment, as if they were shot;—nobody imagining what is the matter; and at the autopsy, the aorta in found ruptured into the pericardium. I had a striking instance of this, in a woman who came into the hospital with a pain (which appeared to be rheumatic) in the neck, face, and shoulder. Leeches were being applied; she shrieked, fell back, and was dead in a few minutes. On opening her, I found that the pericardium was filled with blood. In these cases, on cutting the pericardium, out flows a quantity of bloody serum. After that, you find a coagulum of blood; and then you observe a fissure in the aorta;—first passing through the pericardium reflected over the vessel, and then through the coats of the vessel itself. This fissure is generally transverse. In the case just mentioned, the inner and the middle coats had given way, some time before. A great quantity of blood was effused; the coagulum was organized; and, as in common aneurism, it pushed out the external coat; which suddenly cracked, and she instantly expired. It very often happens, as I have mentioned, that patients die of rupture of the aorta into the pericardium, without the patient knowing previously that there is anything at all the matter; but if the disease be situated a little higher than that, then you have certain symptoms induced.

Supposing that the disease is situated in the ascending aorta, after the vessel has left the pericardium, the patient then frequently complains of pain at that particular spot; and on listening, you hear a certain loud sound at the stroke of the heart,—at the time of the pulse; and this long before it has produced a tumor. When the aneurism has attained a certain size, it generally produces a tumor on the right side;—about the fifth or sixth ribs. The symptoms of disease of the *heart*, are at the sternum on the *left* side; but in the case of the ascending *aorta*, they occur on the *right* side. If the disease be situated higher up still,—in the arch itself, you have the tumor in the situation of the third or fourth ribs. If it occur in the superior part of the arch, then you have the tumor above the sternum at the clavicle. Now, when there is a tumor, it pulsates very strongly; and there are general symptoms. There is frequently cough, frequently mucous and bloody expectoration, and sometimes difficulty of breathing. The dyspnœa is sometimes so great, that the person cannot lie down; and sometimes there is difficulty of swallowing. If it so happen that the œsophagus is pressed upon, the compression is frequently such, that it produces spasmodic asthma. You have pain at the right shoulder, pain down the right arm, and pain at the right side of the head. In these circumstances, there can be no doubt whatever as to the nature of the disease.

I have been able to discover this affection, by hearing a loud sound in these parts. Bertin said it could be discovered; but Laennec

said it could not. Bertin replied, however, that Laennec did not apply the stethoscope in the right place;—that he should have applied it over the sternum; and that then, in the incipient stage, he would have heard a loud sound. I certainly have heard, at that part, a loud sound,—louder than at the heart itself; and when the patient has had difficulty of breathing and cough,—such symptoms as might arise from aneurism,—I have suspected aneurism of the arch of the aorta, before there has been an external tumor. The other day I had a case, in which I was able to verify the diagnosis. But then I had something more to guide me; for there was a tumor; so that it was clear there was some disease in that quarter. I did not pretend to be very sagacious, therefore, in making out that the arch was dilated. If, however, there be no tumor, so that there is nothing to guide you but the ear, I should think the diagnosis would not be very certain. Occasionally you hear a bellows-sound;—just as in aneurism of other parts. Sometimes you have a double sound;—exactly as in the case of the heart; and for this reason;—you hear the sound of the *heart*, and also the peculiar sound of the *aneurism*.*

As to the *treatment* of a case of this description, nothing can be done but to enjoin perfect rest, and deprive the patient of all stimuli;—giving him that nourishment which is least likely to quicken the pulse. Bleeding, from time to time, is exceedingly useful. You

* For additional particulars respecting the Morbid Sounds of the Heart, see Appendix, No. XII. We cannot take leave of Diseases of the Heart, without directing the particular attention of our readers to Dr. Elliotson's splendid work on that subject,—already so frequently quoted. It consists of three lectures; the first of which is devoted to Diseases of the *External* Membrane of the Heart; the second to Diseases of the *Internal* Membrane of the Heart; and the third to Diseases of the *Substance* of the Heart and of the Aorta. The following passage developes the Doctor's views of pathological investigations; and we quote it the more readily, as it contains an authentic list of his publications:—"Experimental facts, however insulated they may at first appear, gradually arrange themselves with others into general principles; and thus, what is at first little better than *empiricism*, becomes *science*. I confess that I look to this source of improvement with more hope, than to any other. To such investigations, therefore, I have sedulously applied myself; and those of my results which were successful, are before the profession:—'Cases illustrative of the Efficacy of Hydrocyanic Acid, in Affections of the Stomach; with a General Report on its Medical Powers;—Some Facts respecting the Use of Opium in Diabetes; and the Necessity of varying the Doses of Medicine, in various Circumstances (8vo. 1820).'—'On the Medical Properties of Quinine.'—'On the Use of the Subcarbonate of Iron in Chorea, and its General Properties.'—'On the Use of Subcarbonate of Iron in Tetanus.'—'On the Use of the Sulphate of Copper in Chronic Diarrhœa.' All these four papers, together with three of a pathological nature, were published in the twelfth, thirteenth, fifteenth, and sixteenth volumes of the 'Medico-Chirurgical Transactions.' The pathological papers are on,—'Rupture of the Stomach;'—'Fallopian-Tube Pregnancy;'—and the 'Communication of Glanders from the Horse to the Human Subject.' I make this statement for the purpose of easy reference; as some of my friends wish me to collect these,—the whole of my professional attempts, except the English Edition of Blumenbach's 'Physiology,' and an Introductory Lecture upon State-Medicine,—into one volume; and I feel disinclined to follow their advice."

This disinclination we regret; as we are persuaded that the volume here pointed out, illustrated by such notes as the progress of medical science, and the author's recent experience may dictate, would be an acceptable present to the profession.

will find that you relieve the sufferings of the patient exceedingly, by bleeding him. You know that, in aneurism, nature fortifies the part, by producing adhesions around it; but there is frequently more inflammation than is useful; and there are frequently pricking, stabbing pains, together with violence of the heart's action; and all these are diminished by bleeding. You will find the blood buffy and cupped, in such cases; because there is inflammation going on. It is of the greatest use to bleed from time to time; and to keep the patient low and quiet. These are not cases to be neglected. We may not be able to save life; but we may diminish the pain very much.

PERITONITIS.

The first disease of which I shall speak, after passing the diaphragm, is inflammation of the peritoneum;—*peritonitis.* This disease is, of course, attended by pyrexia,—general feverishness. Although the whole body is hot, yet generally the abdomen is hotter than other parts. The pulse is, for the most part, rather small. Of course, it is quick; sometimes it is wiry; sometimes it is hard; and sometimes it is soft. There is no invariable pulse in peritonitis, with the exception that it is always quick. More frequently it is small than full; and perhaps more frequently rather hard than soft. There is a great variety as to the appearance of the tongue. Sometimes it is really pretty clean,—at the utmost only whitish; sometimes it is covered with a thick, creamy mucus; and sometimes it is rather dry. You have no very great index to the disease, either in the appearance of the tongue, or in the character of the pulse; but the abdomen is always very tender on pressure; and the tenderness is too general for one to suppose that any particular organ is inflamed. One of the modes of distinguishing peritonitis from inflammation of a particular organ, is by observing that the tenderness of the abdomen is not in the seat of any particular organ whatever; but is more or less general. As the peritoneum stretches all over the abdomen (being named from *περιτεινω, to stretch over*), and usually a great proportion of it is inflamed, the patient is most frequently easier on his back, than in any other position; and sometimes, to obtain all the ease possible, the patient lies with his knees spontaneously raised. In general, patients cannot sit up, on account of the abdominal viscera gravitating so much as to produce painful distention; and therefore they are easiest in a lying posture. Besides the tenderness, there are very frequently pricking pains of the abdomen,—as if needles were running into different parts; and occasionally there is a sharp, cutting pain. The abdomen is usually very tense. As it is a mere membrane that is inflamed, the bowels are in general not particularly disturbed. They are regular, or at the utmost only slightly confined; and are easily opened. There is no obstinate constipation.

Although the inflammation is generally very general, yet it may rage more severely at one spot than at another. Consequently there is more pain at one part than at another; and if that part be situated

over any particular organ, then you have the function of that organ more or less disturbed. If, for example, at any particular period of the disease, the membrane covering the stomach be inflamed, you have vomiting induced;—if it be the portion which covers the bladder,—and which is only a partial covering, as you know,—then there may be very great irritation of the urinary organs. In the former case you have vomiting; in the latter, strangury. As the inflammation spreads, it attacks one part after another. It is the peritoneum at large that is inflamed; and therefore the tenderness is general, and the pain diffused; and any disturbance of function that exists in the abdominal viscera, is trifling in proportion to the general pain and uneasiness. It is in this way that you distinguish it from inflammation of any particular organ.

This disease, when acute, may last about a week before it proves fatal; but if it remit, it may of course last much longer.

After death, the appearances found are nothing but those which are usual in inflammation of a serous membrane;—for example, a quantity of serum of a whey-colour, more or less turbid, with flakes of fibrin. It is rare to find the serum bloody. The fibrin is frequently effused in a gelatinous form, both in the parietal and visceral portions; and perhaps adhesions are thrown out, so that there are bands. Now and then the secretions resembles pus; and now and then it is *really* pus. As to the redness of the peritoneum, that may be either in little stars,—a collection of red points, or diffused in patches. The peritoneum, like most other serous membranes, becomes rather thicker than usual. It is not so translucent as in health; and, now and then, it is exceedingly pulpy. When the peritoneum covering the alimentary canal is inflamed, the redness will sometimes spread inwards, even to the villous coat; but it is very rare to find inflammation of the parietal portion spread outwards, towards the abdominal muscles. When the portion covering any particular organ is inflamed, you may find the organ itself affected; as, for example, the omentum or the mesentery; so that you may have *omentitis*, or *mesenteritis*, or any other *itis* you may choose to manufacture out of the name of the organ, and the termination "*itis*" added to it.

This disease very often occurs in a puerperal state; and by some it is thought occasionally to be contagious. It is called, when occurring in that state, *puerperal fever*. Sometimes it will take place immediately after delivery; and sometimes many days afterwards,—whether the patient is sickly or not; and, on the other hand, it will sometimes take place during the latter period of pregnancy. Whether it be a contagious fever or not, it certainly is very often epidemic; and one might say *endemic*; for this disease (puerperal peritonitis) frequently prevails to a great extent at a particular period; and sometimes it prevails only in particular districts.*

* The reader is recommended to consult, on this subject,—"A Treatise on the Disease termed Puerperal Fever; illustrated by numerous Cases and Dissections. By John Mackintosh, M.D."

Peritonitis is very frequently a cause of death in cancer of the womb, or various other diseases of the uterus, or of the ovaries. Whenever cancerous or other ulceration occurs in these parts, and exists for some time, the peritoneum around the ulceration comes to be inflamed; so that peritonitis is a common termination of organic diseases of these parts. Peritonitis sometimes occurs, also, after a rupture of the stomach or intestines, from ulceration. Of course you are aware that it sometimes takes place from a hernia,—either from the operation for it, or the hernia itself,—from an operation for stone, from paracentesis abdominis, and so on. It will arise from any wound, or a mechanical injury of any sort, inflicted on the abdomen. It is frequently consequent upon the application of cold; and especially cold and moisture applied when the body is overheated;—just the same as any other inflammation.

The *treatment* of the disease is easy enough. It consists of general bleeding, followed by an abundance of *local* bleeding, by means of leeches), a rapid affection of the mouth by mercury, and keeping the bowels well purged the whole time, cupping would produce great pain. Some prefer fomentations, and others blisters. Perhaps, it is not a matter of importance which you apply; but if you have bled as much as you dare, and still want to do more, then blisters will be the great point of treatment. Some have recommended the external application of cold to the abdomen, in such a case; but I have never employed it.

In that form of the disease which occurs in connexion with pregnancy, or the puerperal state, it is found that a great variety of treatment is necessary. You may have cases where there is active inflammation, demanding a vigorous antiphlogistic treatment;—such as I have now mentioned; whereas, in others, the very utmost that can be borne is the application of leeches. Patients are seized with more or less pain in the abdomen; but you find that the pulse is feeble; and if you bleed them, they will certainly sink so much the sooner. All you can do, therefore, is to apply a few leeches, give a moderate quantity of mercury, and exhibit opium freely. So slight is the inflammation, in some of these cases, and so great the loss of power, that after death the peritoneum is not found red, but rather pale; and it will have very soft lymph lying upon it;—shewing that there was an inflammatory state, but that it was attended with extreme weakness. Where you find that the pulse is feeble, and the patient's countenance expressive of great debility, opium is by far more suitable than bleeding; but if the tenderness seem to indicate bleeding, a few leeches would be all that was proper. In such a case as this, even purging has been found to be too severe a measure; but there can be no objection to a moderate quantity of mercury;—using such a preparation as will not produce an affection of the bowels (Hydrargyrum cum Creta for instance). The application of warmth and moisture, will be found very serviceable. Dr. Gooch, who (as far as I can observe) has treated the subject well, strongly recommends the application of bran, moistened with hot water, and placed

between two pieces of linen. A bran-poultice appears to afford very great relief.

You see, therefore, that the peritoneum may occasionally be in an inflammatory state, attended with such extreme weakness, that the common remedies for inflammation can hardly be put into practice. This is somewhat analogous to what I mentioned respecting hydrocephalus;—that occasionally children have all the marks of that complaint, and yet no signs of inflammation are observed after death. In the case before us, however, the membrane is inflamed, but the debility is out of all proportion to the inflammation. You perceive that the treatment of peritonitis connected with the puerperal state, especially after delivery, requires to be much varied.

Inflammation of the peritoneum is very frequently a *chronic* affection; and in that case there is pain on pressure;—that is to say, there is tenderness, and likewise pricking pain. There is almost always a feeling of tension; and sometimes that is more complained of than the pain itself; but there is not necessarily any tension to be discovered; for sometimes the integuments are quite flexible. Of course there is pyrexia. The pulse is constantly quick; there is more or less thirst; the skin is generally more or less dry; the tongue is foul, and either white or yellow towards the back. The breath, in this disease, is very frequently fœtid; the face sometimes assumes a doughy aspect; the bowels generally are torpid; and frequently there is ascites, from the chronic inflammation of the membrane causing an excessive secretion. As the inflammation is of a chronic character, of course you may presume that the body wastes. The internal functions are very much deranged. The stools are very copious, and generally of a white-brownish colour;—not being so fully impregnated with bile as they should be; and the mesenteric glands are frequently diseased. In fact, when chronic peritonitis occurs in young persons, it is, for the most part, a scrofulous disease; and is connected with more or less affection of the mesenteric glands. After death, you may find excessive redness and thickness of the membrane; and an effusion of serum and fibrin.

The *treatment* of the disease consists in the frequent application of leeches; the frequent use of the warm bath, general or partial; warm applications,—such as the bran-poultice I mentioned, applied constantly day and night; or, as some have recommended, *cold* applications, frequent blisters, and a regular purging with calomel. The contents of the intestines are very abundant. Of course the diet should be mild. After the disease has lasted some time, if there be no very great excitement, you may try mild tonics;—the mildest form of iron, for instance; but during the greater period of the disease, antiphlogistic measures, mildly carried on, constitute a preferable mode of treatment.

ENLARGEMENT OF THE MESENTERIC GLANDS.

If, along with chronic peritonitis, the mesenteric glands are enlarged,—or if, indeed, they are enlarged *without* that affection,—you may or you may not have a tumor. The mesenteric glands are frequently much diseased, without producing a tumor; yet they are sometimes so diseased, that you find a general hardening of the abdomen. When peritonitis exists, in the greater number of cases, you can only infer disease of the mesenteric glands from the scrofulous look of the patient, from his wasting away, and from there being something more than what chronic inflammation of the peritoneum can produce. When there is tumefaction from disease of the mesenteric glands, frequently a great deal of it is from flatulence; so that if you strike with the fingers, you have a very considerable sound. Sometimes tubercular substance is deposited in the peritoneum itself; so that besides chronic peritonitis, you have scrofula of the peritoneum. It is by no means easy to make out the exact nature of such a case as this. It is pretty clear that there is peritonitis, and that there is likewise scrofula; but whether there are tumors or not, or whether the disease affects the mesenteric glands, or the peritoneum itself, is not always an easy matter to decide; nor is it of any consequence.

Occasionally the mesenteric glands acquire a very large size; and before that, there is a great sense of dragging in some particular direction. In those cases which are very bad, and where there is scrofula in the abdomen at the same time, there is great emaciation, together with sallowness of the complexion,—sometimes a sort of marble-white; and a hectic flush on the cheek,—at any rate, at certain parts of the day. The eyes look clear and glazed. Occasionally, in the course of the day, there is deep lancinating pain in some parts of the abdomen. The stools are generally abundant;—foul, frothy, and imperfectly tinged with bile. Occasionally there is great disturbance of the stomach; so that patients complain of a burning sensation in that organ. The lips frequently swell; are of a deep red colour; and crack, from ulceration in the corners. There is also feverishness. Although the pulse is constantly quick, yet there are exacebations. When the patient does sweat on falling asleep, the skin is frequently quite dry. The emaciation, in these cases, is often extreme; and you frequently see the ends of the fingers enlarged;—exactly as in phthisis.

These are the general symptoms of scrofula of the mesenteric glands, and of peritonitis. The symptoms are always much more severe, and the emaciation is greater, than in simple inflammation of the peritoneum; but still it is often difficult to say whether the latter affection exists alone, or whether the two complaints are united. It is only by finding that the disease is inveterate,—that it will not give way to common antiphlogistic measures, that you begin to suspect, at last, that there must be something more than inflammation of the peritoneum. Occasionally it is not so much the *mesenteric*,

as the *lymphatic* glands that are diseased;—particularly the glands of the loins. All these affections occur more frequently in children, than in adults; but you see them occasionally in the latter.

If the mass of tubercular substance be very great, it may produce peculiar effects, by its pressure on various parts. From pressure on the ureters, you may have more or less suppression of urine; by pressure on the gall ducts, you may have jaundice; and by pressure on the pylorus, you may have vomiting. Some have supposed, that when the mesenteric glands are enlarged, the emaciation is the consequence of the chyle being interrupted in its course; but even if the chyle be not obstructed, the scrofulous disease is sufficient to account for the wasting of the body. In fact, some experimentors say that they have always found an injection pass freely through the absorbent glands, although they were enlarged in various degrees. Many have asserted this.

When you see a disease of this description,—when you suspect that, besides chronic inflammation of the peritoneum, there must be something more, from the disease not giving way to ordinary treatment,—to the application of moisture, warmth, and steady purging; or moderate purging, local bleeding, and similar things,—it may be right to exhibit iodine in its various forms; and if you can discover a tumor in any part, or any general hardness of the abdomen, so as to make it probable that the mesenteric glands are enlarged, it may be given from the first. We should also rub in iodine, in the form of hydriodate of potass, as the patient can bear it; but there is frequently too much pain for it to be borne at all. The hydriodate of potass will often be borne, when the iodine itself cannot. But these are very unsatisfactory cases to treat; and frequently all that we can do, is to send people from the unhealthy situation in which they may reside, to the fresh air. The havoc which is found in these cases, is sometimes dreadful. You may see the whole of the intestines glued together. Sometimes you will see ulceration of the peritoneum itself;—the intestines within being sound. Occasionally the ulceration makes the peritoneum quite thin. It even ulcerates through; and then you find ulceration of the intestines, and chronic inflammation of the mucous membrane of the intestines, and of the lacteal glands. Frequently the lumbar and dorsal glands, are all in a state of enlargement and suppuration; so that there is extreme suffering, and the most decided hectic before death; and, after it you certainly have the most frightful spectacle that can be seen in Morbid Anatomy. This is entirely a scrofulous affection.

ASCITES.

Sometimes, although the chronic inflammation of the peritoneum is very inconsiderable, yet the effusion is exceedingly great. Sometimes, indeed, there is scarcely any mark of inflammation to be found; but you have a structural change of the peritoneum, and a great deposition of water. The peritoneum becomes thick, and assumes a satin-whiteness. In fact, it looks like a piece of satin ribbon; so

that you may doubt whether you can call its state inflammation or not; but it is of an inflammatory nature. When this effusion is very considerable, we call the disease *ascites* (from *ασκος, a large abdomen*).

When ascites is not the result of acute or decided inflammation, you will find in most cases that there are marks of structural change; and some ascribe it to disease of the liver;—so frequently is that organ affected at the same time. Where, however, the peritoneum is diseased, you will find the portion covering the liver very thick, quite white, and opaque; and I believe that ascites does not arise from disease of the liver, but from a structural change in the peritoneum itself. Some ascribe it to an obstruction in the liver or spleen. An obstruction may exist in those organs; but if the ascites arose from that source, it is very odd that we do not find all the veins enlarged, —very odd that there is no effusion into the intestines, a varicose state of all the veins, and things of that description. I have seldom opened a case of ascites, in which the liver was not diseased, in some part or other.

Dropsy of the peritoneum is characterized by a fluctuating and elastic equable tumefaction of the abdomen. At first it only inconveniences a patient when he is sitting upright, and fluctuation is discovered only at a certain point; but as the disease extends, the tumefaction becomes universal. The best mode of discovering the fluctuation, is to place the hand against one part of the abdomen, and then to give a gentle tap with the fingers on another. Occasionally the integuments, or the peritoneum, are very much thickened; and it is then necessary to give a good *sharp* tap; but, for the most part, a very *gentle* tap will lead you to feel the fluctuation. You will sometimes not find the fluctuation throughout; and occasionally the peritoneum differs in thickness at various parts; so that it is necessary to tap from above downwards, and in various ways. There is in general, as in most other dropsies, very little urine; but however much the abdomen may be distended, there is generally little dyspnœa, so long as the chest remains free. So long as there is not disease of the heart, or pleuritis, or bronchitis, it is surprising how well patients will breathe with a very large abdomen. The tumefaction begins, of course, in the lowest part; and gradually ascends, till the whole abdomen is distended.

If the disease be the mere effect of acute inflammation, subdue that, and the dropsy will cease; but when it does not arise from that source, or is not the result of any discoverable inflammation, the prognosis is generally bad; and more especially if you can discover disease of any of the abdominal viscera.

This affection, after a time, is followed by œdema of the legs; but sometimes the latter takes place first; and the ascites is nothing more than the result of a general tendency of the cellular membrane of the body, and serous membranes, to secrete fluid. But where there is not this general disposition to dropsy, and its occurrence in the abdomen is a local disease, the legs swell last, and frequently this does not take place for a length of time. You recollect that

Shakspeare describes Falstaff as having a *decrease* of the *legs*, and an *increase* of the *belly*.* The fluid that you find after death, or which you let out, is generally yellow and glutinous; and the longer the disease lasts, and the more frequently the patient is attacked, the darker it generally becomes, and the worse becomes the case itself; because the peritoneum falls more or less into disease, and perhaps becomes quite soft.

The *treatment* of the disease must depend, in the first place, on the fact of there being any inflammation or not. If you discover inflammation, generally speaking, you have merely to treat that; but if you find no inflammation at all, but simply a swelling of the abdomen, you will frequently get rid of it by purging the patient briskly with elaterium, or any other hydragogue purgative;—such as jalap, or cream of tartar. Elaterium is better than all other things; and patients will take it for a considerable time, every day, or every other day. It is necessary, however, to begin the dose very carefully; for one person will not bear above a quarter of a grain, whereas I have given others five ar six grains. Much depends upon the preparation; for nothing is more adulterated than elaterium. Some houses prepare it very carefully, and some very badly; but when you have a tolerably good preparation, you should give a quarter of a grain, and ascertain how far it and the person to whom you give it agree together. If you give a grain at first, it may produce such violent vomiting and purging, as to cause great distress. Some patients will bear the dose increased to five grains; but generally the average quantity is from half a grain to a grain and a half. While you exhibit this every day, or every other day, it will be good practice to support the patient with wine; so that while you drain him well, you make him some sort of amends for it. It is astonishing how much fluid may be got away; and while there is no rule for the dose, yet the object is to discharge as much liquid from the alimentary canal as possible,—according to the patient's strength.

Purgatives are certainly among the best means, you can employ. Neither leeches nor blisters do much good. If you can ascertain that there is organic disease of any sort, you may give mercury, iodine, and things of that description; but frequently, with all these, you do not succeed; and you are obliged to tap the patient. I do not know that there is any harm in tapping early. On the contrary, it may be of great use in preventing the parts from becoming so stretched, that they will not contract again. Others have thought the same; but I have not a series of cases treated on each plan. It is a fact with respect to dropsy of the ovaries, that the more you tap, the more harm you do. The sooner you tap the patient, the

* *Sir John Falstaff.* You that are old, consider not the capacities of us that are young.

Lord Chief Justice. Do you set down your name in the scroll of youth, that are written down "old," with all the characters of age? Have you not a moist eye, a dry hand, a yellow cheek, a white beard, a *decreasing leg*, an *increasing belly*?

King Henry the Fourth; Act I, Scene 2.

sooner must she be tapped again. There is no doubt but that, in ovarian dropsy, the greater the length of time you can postpone the operation, the longer you may still put it off; but this is not the case in dropsy of the peritoneum.

If you choose to treat the disease with diuretics,—which is frequently a good practice,—squills, digitalis, and mercury, answer exceedingly well. This is not so certain a practice as treating the case by hydragogues, which are also diuretics. If you adopt it, you will frequently find that the kidneys will not act; and yet if you tap the patient, they will act directly. It is common, when the abdomen is in a state of great distention, for the kidneys to refuse to secrete; but if you take off the tension, the patient will make a great quantity of water. You will observe this, whether patients are taking diuretics or not. It is always a useful plan, when the water is diminishing, to have the abdomen well bandaged; or to have a thin belt, producing equal pressure thorughout. You will find this apparently of very great use.

As to the mode of operating, and the part to be selected for the purpose, I need not say any thing on that subject. It would be well, however, before you propose the operation to a surgeon, carefully to ascertain whether the disease exists;—to ascertain, not merely that there is fluctuation, but fluctuation from a collection of water in the peritoneum; because the urinary bladder will occasionally become enormously distended. I have seen it so distended, that the person has been supposed to have ascites; but on drawing off the urine, the ascites entirely disappeared. This disease sometimes co-exists with pregnancy; and pregnant women have been tapped for ascites with success. Sometimes it will co-exist with a diseased ovary. I have known instances where the ovary was as large as a child's head; and where, in addition to that, there was ascites all around it.

ORGANIC DISEASES OF THE PERITONEUM.

The peritoneum is subject to some other diseases;—such as to become cartilaginous, to become bony; and to have hydatids, or scirrhus, or fatty tumors deposited in it. The same applies to the omentum.

DISEASES OF THE ABDOMINAL GLANDS.

The lymphatic glands within the abdomen, besides being subject to the disease I have mentioned (scrofula*), are sometimes found after death to have become indurated,—almost changed to cartilage; and to have suppurated, independently of all scrofula;—to have pus collected in them, in small quantities, or in drops. These glands are also subject to melanosis, to scirrhus, and to the formation of earthy concretions; and so likewise are the *mesenteric* glands; but

* From "scrofa,"—*a sow*;—swine being considered to be particularly subject to the disease.

you cannot make out the real nature of the affection, till after death. When the inner surface of the intestines is much diseased, you are almost sure to find the mesenteric glands also affected. When there is scirrhus, or cancer of the intestines, all the neighbouring glands, lacteals, and absorbents, are commonly enlarged, and labouring under the same disease. But you cannot discover this during life; unless, by chance, some particular tumor is produced.

CYSTS IN THE ABDOMEN.

The peritoneum, (or, at least, the sub-peritoneal cellular membrane), is likewise subject to the formation of cysts. Occasionally cysts are found in other organs, projecting into the peritoneum. Sometimes the ovaries will become dropsical;—cysts being formed in them. Occasionally large cysts are attached to the concave surface of the liver,—sometimes to the centre, and in other instances to the side. Besides general dropsy of the peritoneum, therefore, you frequently have large serous cysts. In these cases the tumor is not general, but local;—does not occur at the lower part particularly, but may take place any where in the abdominal region. It usually occurs at one side, in the first instance, and arises from one of the ovaria. You will find that the fluctuation is local. Though the tumor most frequently arises from the ovaria, yet I have seen a large cyst at the epigastrium, attached to the liver. Now and then there are small cysts attached to the spleen; and, at last, the tumor will become so excessively large, that it is impossible to say whether there is ascites or not. The whole peritoneum will become filled. So again, with respect to the ovaries, you may not be able to say whether there is ovarian dropsy or not.

DROPSY OF THE OVARIES.

It is surprising to see how much water is sometimes collected, in cases of ovarian dropsy. I once saw an old woman, who had had the disease many years, and never would be tapped. She was of an immense size; and at last grew so big, that a certain quantity of water was let out; and we found that it amounted to eighty-four pints. The diaphragm had been pushed up to the fourth rib; the chest was exceedingly small; but the size of the abdomen was immense. That, however, was nothing to what other people have seen. M. Chevalier says, that he once saw one hundred and thirty-six pints removed; —all of which must have existed at once. You will find the case in the third volume of the "Medico-Chirurgical Transactions." It was drawn off at three or four times. The health, in these instances, is not affected, as it is in dropsy of the peritoneum; so that a woman at Paris lived to be tapped three hundred times. Another woman was tapped one hundred and fifty-four times. In the course of that period she had three children; and was tapped two or three times during each pregnancy; so that she lost no time, but went on bearing children and water too. At least twenty pints were removed at each time; and she was tapped, at various periods, during twenty

years. There is another case recorded, where six thousand six hundred and thirty-one pints were taken away. It was not all removed at once; but was drawn off at eighty operations, performed in the course of twenty-five years;—so long do women sometimes live in this affection. I suppose they kept a very accurate account. In one year this woman had four hundred and ninety-five pints taken away. The case is mentioned by Dr. Mortimer, in the "Philosophical Transactions." There is an account, by a celebrated French surgeon, of a case where four hundred and twenty-seven pints were taken away in ten months. A case is mentioned by Mr. Carruthers, in his work on Inflammation, where a woman was tapped nineteen times in three years. A German author mentions an instance, where a person was tapped one hundred and forty-three times. Only two years ago, an advertisement appeared of a woman who wished people to go and see her (and pay for it, I presume); and who stated that she had been tapped one hundred and twelve times, and had had two thousand eight hundred and eighty-eight pints taken away from her. She came from Chepstow. I had not time to see her; but she had the certificate of a medical man, stating that he had performed one hundred and twelve operations, and had removed two thousand eight hundred and eighty-eight pints. Whether the case is true or not, is of little consequence; because, without doubt, great quantities have been taken away. It is no matter whether exactly six thousand six hundred and thirty-one pints were drawn off,—as mentioned in one of the foregoing cases. Five thousand will do very well to illustrate the fact, that people in this disease will live very long, suffer an immense secretion of water, and bear the operation of tapping an extraordinary number of times.

The fluid, in ovarian dropsy, is often exceedingly greasy; so that you will find on the surface a quantity of irridescent, or at least whitish shining matter; which, if rubbed in the fingers, will form an unctuous mass. I have collected it; and found that it would melt and burn, like any waxy matter. It emits a bright flame, and is insoluble in water. Dr. Bostock mentions, in the fifteenth volume of the "Medico-Chirurgical Transactions," that in a case of very old hydrocele, he found the serum mixed with a portion of this unctuous substance. He conceives it to result from a change which the fluid has undergone, subsequently to its original deposition. In order, however, for that to have taken place, it must have been of very long standing. He found it to be analogous to that greasy unctious matter, which is called *adipocire*. He terms it "albuminoserous matter;" and says it is distinct from cholesterine. It is not the same as that which is found in the liver, the urine, and certain biliary calculi; though it is of an analogous nature. Something like this has sometimes been found in the thyroid gland, and in the fluid of various tumors. You will find some chemical observations upon it, in the volume to which I have referred.

In dropsy of the ovarium, I should certainly make it a rule to defer the operation of tapping as long as possible: first, for the rea-

son I mentioned before;—that it is a fact, (as is also a common opinion among the vulgar), that when you have once tapped a patient, she soon requires to be tapped again; and secondly, because, although in an early period of the disease there may be many cysts, yet in general they ultimately open into each other; so that you have only one great cavity. Hence, if you tap early, you most probably draw off only a portion of the fluid by the operation;—the cysts being distinct, and not freely in communication with each other.

In these cases the only remedies that (so far as I am aware) are of any use, are iodine, and sometimes mercury. Indeed, the best practice, in cases of encysted dropsy of the ovaria, is to support the patient's strength; to put off tapping as long as you can; and to give no medicine whatever, except it be iodine. It is in vain to attempt to excite absorption by diuretics; and by purging you will only nauseate the stomach, and take away the appetite. I have seen cases of encysted dropsy of other parts of the abdomen yield, apparently, to the free exhibition of iodine internally, and its application externally; and I have seen it succeed partially in dropsy of the ovarium. I have fancied that the power of this remedy has been increased, in a trifling degree, by combining it with mercury.

Very often, when an ovarium is enlarged, there is no fluctuation to be found for a length of time. The walls are solid;—solid substance is deposited; and it is not till the fluid has accumulated to a considerable extent, that you can discover fluctuation. Encysted tumors of the abdomen, especially in young women, are partly solid and partly fluid; and occasionally, if you squeeze the part, you find small moveable tumors, having portions of cartilage sometimes deposited in them. In some cases you find hydatids within. I had a case, in 1828, in which there was a tumor of this description; and which I concluded was a tumor of the ovarium. Fluctuation was not very apparent; but still there was fluctuation. I was giving this patient considerable doses of calomel,—on account of there being a large quantity of solid substance, apparently of very great hardness,—when she was seized with violent vomiting and purging, accompanied by intense pain. Whether the vomiting and purging arose from the calomel, I will not say; but she had been taking it for some little time; for I fancied there might be solid matter, as well as a collection of fluid. In the course of one night, the tumor entirely disappeared; after having resisted every other means for some months. It might be that the tumor, in this case, had burst into the peritoneum; and that the fluid had been quickly sucked up by the absorbents of the peritoneum, and as quickly secreted by the vessels of the kidney. Or it might be that violent purging being set up, a great discharge took place from the intestines; and the absorbents went to work, and reduced the tumor. However that may have been, the fluid re-accumulated; and the tumor became as large as ever;—and that after no very great lapse of time. One would hardly suppose that the absorbents within the tumor, were sufficient to produce such rapid absorption. It is more likely that the tumor

had burst at some part. It would appear (at least we are told) that occasionally the fluid has been discharged by the vagina;—that tumors of this kind have ruptured into the peritoneum;—that the fimbriated extremities of the fallopian tubes have set to work, and have poured the fluid into the uterus; and that thus it has been discharged through the vagina. There are several cases on record, of women falling down with ovarian dropsy; and beginning, very soon, to discharge a quantity of water from the vagina; which discharge has continued till the swelling has disappeared. It is sometimes difficult, in these cases, to know whether the water comes from the vagina or the urethra. If it come from the former, we must suppose that the tumor has ruptured, and that the fallopian tubes have pumped up the fluid; whereas, if it come from the latter, we must suppose that the vessels of the peritoneum have sucked it up, and that it has then been re-secreted by the kidneys.

DROPSY OF THE FALLOPIAN TUBES.

Occasionally you will have what perhaps may be, and sometimes is, called "encysted dropsy of the abdomen," arising from a fallopian tube being closed at each end, and a great quantity of fluid being amassed within.

TYMPANITES.

Occasionally air is collected in the peritoneum; and this is one of the diseases called *tympanites*. Sometimes the intestines are exceedingly distended with air; so that the person becomes very large, and the tumor gives rise to a sound like a drum; whence it is called tympanites (from τυμπανον, *a drum*). But, properly speaking, tympanites is a great collection of air in the peritoneum; and I believe this usually takes place from an aperture existing in the intestines, so that air escapes.

DISEASES OF THE PANCREAS.

Having said thus much on disease of the peritoneum, I shall speak of those of particular organs; and first of all of diseases of the pancreas.

The diseases of the pancreas with which we have to do, are all structural. We do not know whether there is any *functional* disease to which it is liable; unless it be the formation of stone. One does not know what office the pancreas performs, either when it is *out* of order, or when it is *in* order. We know nothing about it. No one would refer a symptom that he has, to mere functional disease of the pancreas. It is very seldom that it is the subject of *acute* inflammation. I never met with such a case. But now and then it is diseased in a *chronic* manner; especially when there is disease of a neighbouring organ.

The diagnosis of structural disease of the pancreas, must be exceedingly difficult. Dr. Pemberton, in his work on Diseases of the Abdominal Viscera,* says there is deep-seated pain in the epigastric

* "Practical Treatise on Various Diseases of the Abdominal Viscera. By C. Pemberton, M.D."

region; especially if one hand be placed at the back, and the other on the stomach. However, the pain may not be felt; or you may have pain there from an affection of the stomach;—so that very little, I conceive, is to be learned from that. He says there is more or less sickness, gastrodynia, and emaciation; but I should think that, in general, it must be a mere guess, even if the person is right, when he pronounces that the patient is labouring under disease of the pancreas. The most common affection of this organ, is either common induration, or that particular disease called "scirrhus." Dr. Baillie says that he once saw an abscess in it; and now and then common ulceration is seen. It is said to be sometimes ossified; and sometimes to have hydatids. Sometimes it is wasted, and sometimes it is very large; but, for the most part, this organ is not found diseased in dead bodies; and whenever it is, I believe the disease has evidently been of a chronic form.

PANCREATIC CALCULI.

Now and then a calculus exists in the pancreatic ducts. I opened a patient, not long ago; and was surprised to find calculi in the pancreatic duct. I forget what was the matter with him. The appearance was exactly the same as that given in one of Dr. Baillie's engravings. You know that the duct of the pancreas runs the whole length of the organ; that it is fine at one end, and large at the other; and that the ramifications of it, altogether, look like a feather. I believe these calculi are always homogeneous; and there must have been at least a hundred in the case that I opened. The duct represented in Dr. Baillie's engraving, has attained an enormous size. Pancreatic calculi were analyzed by Dr. Wollaston; and were found to consist of carbonate of lime in the human subject, and phosphate of lime in the ox. But these topics are more the subject of Morbid Anatomy, than of the Practice of Medicine.

DISEASES OF THE SPLEEN.

The next disease of which I will speak, is an affection of the spleen. We know nothing of disordered *function* of the spleen, any more than of disordered function of the *pancreas*; but structural diseases of the organ, and inflammation of it, are sometimes exceedingly evident. Like the pancreas, it is very rarely affected with *acute* inflammation, or with suppuration. Now and then, in peritonitis, that portion of the membrane covering the spleen is inflamed; but, to speak more particularly of the substance of the spleen itself, inflammation and suppuration are exceedingly rare. When it is the subject of *chronic* inflammation, there is pain in the region of the spleen;—pain far back on the left side, higher than the kidney; but there are no symptoms of chronic inflammation of the kidney;—such as a retraction of the testicle, pain down the thigh, pain in the testicle, and an unnatural desire to make water. There is an absence of the symptoms of inflammation of the kidney.

It is not uncommon to see the spleen enlarged after ague. You

will recollect my stating, that this disease is called "ague-cake" by the common people; but technically it is termed "hypertrophy of the spleen." When it is in this state it is generally harder than natural. The size that the spleen will attain, is very considerable. I have seen it reaching the pelvis; and extending from the navel towards the other side. You will easily distinguish between an enlargement of this organ, and an enlargement of the liver, by this circumstance;—that, on applying the fingers, you find the edge is vertical; whereas, in enlargement of the liver, you find that the edge of the tumor is horizontal. The hypertrophied spleen has sometimes weighed twelve pounds. Hoffman mentions finding one that weighed fifteen pounds; and Morgagni, on second-hand information, mentions a case where the tumor weighed thirty-five pounds.

This disease will occur in children, and I have frequently seen it in infants. It generally arises after ague, or after the patient has been exposed to malaria. I met with a singular instance of this enlargement, about a year ago. A woman had two children; and she herself had had ague, but they never had. I rather think she had lived in an aguish part of the country, before the children were born. One of them had enlargement and induration of the spleen, and died. After a time, the same disease began in another child; and I believe it is going on now. I have no doubt but that it will kill it. On opening the body of the first, we found the spleen enlarged, and very hard; but, in other respects, the structure appeared healthy. There was no unnatural appearance in it.

Patients, in this disease, are generally very pale. The blood is not proper in *quality*, if it be in *quantity*;—it is deficient in fibrin, and likewise in red particles. The wasting of the body is not in proportion to the paleness. The patient's bulk remains pretty good, for a long time; although he will become blanched,—in a state of anæmia. Now and then there is a little ascites. The peritoneum covering the spleen becomes affected, like the rest of the membrane; and produces a larger secretion than before. The diagnosis is very easy, long before the spleen has attained to a large size.

With regard to the *treatment*, it would be merely that for any chronic inflammation, or induration. I believe that, if the tumor attains any very great size, nothing can be done; but I have diminished it by the administration of iodine, externally and internally. I have successfully treated many cases in this way; but I have seen others in which treatment of this description failed. If there be pain on pressure, local bleeding, mercury, and the common remedies for inflammation, will be proper. Where the disease has arisen from malaria, it would certainly be well to give the sulphate of quinine; for I have seen improvement take place where the constitution has suffered from malaria; and I have also seen enlargement of the liver much diminished, and give way, with very little other trouble. If, therefore, there had been any exposure to malaria, I should give the remedies for ague; but iodine has frequently, I know, a considerable effect in diminishing diseases of this description. Some-

times there is no pain whatever; and there, of course, you would not think of applying leeches, or bleeding the patient. But if there be pain on pressure, local bleeding ought to be resorted to, in proportion to the general affection.

MISCELLANEOUS DISEASES OF THE SPLEEN.

Sometimes, without any enlargement, you will find the spleen exceedingly *hard*,—cutting exactly like liver; and sometimes, on the other hand, it will become exceedingly *soft*. Very often where, during life, you could discover no particular ailment referrible to the abdomen, you find the spleen soft. If it be not preternaturally hardened, you may, by working it up in your hand, bring it to the consistence of currant-jam; but in various diseases you find that the spleen, on cutting into it, is soft.

The spleen suffers a great accumulation of blood, when there is any obstruction in the organs of respiration. It is supposed by some, that the size of the spleen may depend very much upon the mode in which patients die. If they die after long-continued dyspnœa, you may find the spleen large; although, during life, it was not so enlarged.

Tubercles, of various kinds, are found in the spleen; and I met with a singular instance the other day, of a large number of vessels in the spleen in a state of ossification. Calculi have been found in the spleen; but diseases of this organ are not very apparent, unless the organ itself becomes enlarged. You know it is said that people can do as well *without* this organ, as *with* it; and since the time of Galen, persons have amused themselves with cutting out the spleens of animals; and have said that they perceived no difference afterwards. It is said that the spleen, as well as the pancreas, has been absent congenitally; but such things must be exceedingly rare.

HEPATITIS.

We will now proceed to consider the diseases of an organ far more important than the pancreas or spleen;—namely the liver. It is very subject both to acute and to chronic inflammation. When the liver labours under *acute* inflammation to any considerable amount, the symptoms are pyrexia and constant pain, chiefly in the right hypochondrium. The greater part of the liver is on the right side; and therefore you have the pain chiefly there. There is likewise a sense of tension, or weight. It is said, that if the *surface* of the liver suffer, you have mere tension; whereas, if the *substance* be affected, then a weight is experienced; or if it be the peritoneal coat which is inflamed, then you have a greater degree of pain on pressure, and pain of a sharp character. The pulse is said to vary accordingly as you have inflammation of the peritoneal coat, or inflammation of the substance; but you cannot depend much upon that. You have different kinds of pulses, in various circumstances. The pain extends up to the scapula, goes through to the back, and very frequently to the right shoulder. The patient lies best on the

right side, and for this reason;—if he lie on the *left*, the whole mass of the liver (situated as it is chiefly on the *right* side) drags towards the *left*, and all the parts are put on the stretch. You find, in disease of the *heart*, that he lies best on the right side; and this is also the case in disease of the *liver*; but the situation of the uneasiness makes the difference between the two diseases very remarkable. There is difficulty of breathing, and an affection of the chest, in disease of the liver; but not so great as in disease of the *heart*. The difficulty of breathing arises from the motion of the liver, in respiration, in accordance with the ascent and descent of the diaphragm. There is likewise, from the proximity of the liver to the diaphragm, a dry cough; and if you have any doubt about the situation of the pain,—whether it is just on one side the diaphragm, or on the other,—you have only to apply the stethoscope. If it be disease of the *liver*, you find no alteration of the sounds; whereas, in an affection of the *chest*, you will find the various signs which I mentioned before. From the proximity of the liver to the stomach, there is very frequently nausea and vomiting. Very often there is a little jaundice; and sometimes *complete* jaundice.

This acute inflammation frequently terminates in resolution; and sometimes in suppuration. The latter circumstance is rare in this country; but in hot climates it is very common. Occasionally,—as you will recollect I mentioned when speaking of suppuration of the brain,—the pus is secreted in small drops throughout the organ; but in other cases it forms one immense abscess; and sometimes both circumstances occur. The quantity of matter which will be collected in this way, is sometimes enormous. There are various ways by which nature gets rid of this pus. Occasionally an adhesion forms between the two parts of the peritoneum,—the loose and the visceral; and the matter points externally. Sometimes an adhesion takes place to the stomach, sometimes to the intestines; and I think the matter more frequently finds an outlet in that way, than in any other. Sometimes nature does not succeed in forming adhesions; and then the matter is poured into the peritoneum. Now and then an occurrence takes place less favourable than the discharge of the pus, into the stomach and intestines;—adhesions take place to the diaphragm; and the matter is discharged through the air-passages. We have cases on record, in which the pus has discharged itself into the gall-bladder; and cases still more rare, in which it has presented itself at the back; nor at the *front*, or at the *side*; but at the *back*. Cases of this description have been mistaken for lumbar abscess. Occasionally the matter has been discharged with the urine; and there is one case upon record, in which an abscess emptied itself into the vena cava; and death was the consequence. Sometimes the abscess does not discharge itself at all, but there it remains; and patients have died with a large abscess in the liver;—the existence of which was not known before. If the matter be disposed to discharge itself externally, it is evident enough; if it discharge itself into the stomach, you have vomiting of matter; if into the intestines,

you have a quantity of matter in the stools ; and if it discharge itself by the air-passages, you have cough, and many of the other signs of phthisis.

But more frequently than not, perhaps, the *acute* disease subsides into the *chronic* form. If the inflammation be situated on the surface, you will have great chronic inflammation ;—you will have great pain there, especially on pressure ; and (in all probability) ascites,—from the peritoneum being affected. If the substance only is diseased and the peritoneum escapes, you have merely a dull heavy pain there ; and very frequently no ascites at all. Of course you may have chronic inflammation of the *substance*, and of the *surface* of the liver conjoined ;—the same as in the acute form ; and the former, as well as the latter, will produce an abscess, and be followed by all the structural diseases to which the part is subject. The *acute* form of the disease is very common in all the fevers of hot climates ; and hepatities is continually united with all other inflammations of the abdomen ;—with enteritis, peritonitis, gastritis, and all the other inflammations of that region. The *chronic* form is very often united with dysentery. It is very common for a person to have chronic *dysentery*, and chronic *hepatitis* at the same time.

The *causes* of hepatitis, whether acute or chronic, are the common causes of inflammation ; getting wet, exposure to cold, and other similar occurrences. It appears to be much predisposed to by continued heat ; the disease, at least, is very common in hot climates. It is said that long-continued heat alone induces pure hepatitis ; whereas, if the long-continued heat be united with the cause of fever,—such as malaria and other things,—then you have a combination of hepatitis with various fevers. As to the *diagnosis*, the disease is easily distinguished from inflammation of the chest, in the way I have mentioned ;—by the absence of all auscultatory signs ; by the situation of the pain ; and by there being nausea and vomiting. It is distinguished from gastritis by the situation of the pain, which is much to the right side ; while, in gastritis, it is in the epigastrium, and more to the *left* side,—from the stomach being to the left of the epigastrium. You may have symptoms at the epigastrium in hepatitis ; but you have also considerable pain on the right side. It is distinguished from peritonitis by the local nature of the pain ; for, in peritonitis, there is inflammation at other parts of the abdomen.

We have now to consider the *treatment* of acute and chronic hepatitis ; and this may be dismissed in a very few words. It is the simple common treatment of inflammation ; and, for the most part, it is very successful. You have only to make your diagnosis ;—to ascertain that it is disease of the liver, acute or chronic ; and to treat it accordingly. I may mention, however, that it was once supposed (as you will find mentioned in works published twenty or thirty years ago) that mercury ought not to be given in *acute* inflamma-

tion of the liver, because it stimulated the organ; but that it was proper in the *chronic* form. The truth is, however, that both forms require the same treatment. The terms "*acute*" and "*chronic*" refer merely to the *duration* of the disease; and there is no difference between them, except that the symptoms are less urgent at one time than at the other; and whatever is good in the one, is beneficial in the other in a less degree. But independently of that consideration, I do not know that mercury has any extraordinary power in stimulating the liver, in the way that has been supposed. It was thought it would give a bilious tendency, when there was not one; and it is possible that mercury may produce bilious evacuations, when it is long continued; but I am sure that mercury, pushed on to ptyalism, is just as useful in active hepatitis, as in any other acute inflammation. I do not know that it will do any good by its specific action on the liver; but it will by its general tendency to subdue active inflammation. Purgatives are particularly useful in inflammation of the liver;—much more so than in inflammation of the chest; because they act as local means, and prevent a great quantity of blood from going into the vena portæ; and therefore less gets into the liver.

The *chronic* inflammation requires the same treatment as the *acute*, only carried on less violently,—carried on chronically;—not doing all you have to do in a day or two; but carrying on your measures for some weeks, or even months. The moderate exhibition of mercury,—not to produce a rapid ptyalism, but so as to keep up a gentle affection of the mouth,—is useful. Long continued purging is very beneficial in chronic disease of the liver; and hence the Cheltenham waters do great good in this affection, by draining the abdomen generally. Some have conceived that acids are useful as tonics; and the nitric and muriatic acids were very famous some time ago; but I do not know that there is any particular use in them. I have always succeeded in treating chronic inflammation of the liver, by the same means that I employ in any other inflammation;—more or less loss of blood, general or local, and the moderate exhibition of mercury. I have never found it necessary to make any difference between treating inflammation of the liver, and inflammation in any other part. Some have thought that dandelion does good; but I have never seen its virtues in affections of this kind.

As to the suppuration which sometimes occurs, that requires to be treated on common principles. If the abscess point to the skin, of course a knife may be applied, and the matter let out;—just as in any other abscess; only that it might be dangerous to let out a great quantity at once. It should be done gradually, in order that the part may slowly contract. If the discharge take place inwardly through the lungs, or the intestines, you have only to lessen the irritation by narcotics,—as in other cases; and this will also be required if you open the abscess.

STRUCTURAL DISEASES OF THE LIVER.

Many diseases of the liver are called "chronic hepatitis." The liver is subject to a vast number of structural diseases; and these pass as chronic hepatitis. Indeed, it is very often impossible to make the distinction. You will find, at the outset, pain on the right side, pain at the shoulder, perhaps a little jaundice, tenderness in the region of the liver, feverishness, and wasting; and you may say that the patient is labouring under chronic hepatitis. You treat him accordingly; but find that you do not succeed. On the contrary, the disease obstinately remains; and at last, perhaps the liver becomes thickened much, and very much enlarged. Sometimes it is enlarged and hardened, from the very first;—simply as the result of inflammation; and sometimes it may be subdued by the common remedies of inflammation. I am quite sure that the liver will inflame from mere turgescence of blood; and perhaps without inflammation,—from mere congestion,—it will become very large. I am sure that the bulk of the organ will alter, according to the quantity of blood in it; for I have seen it large, and very soon (in a week or two) it has been small again. I have no doubt that internal organs will vary very much. They will suffer (if I may so speak) a sort of *erection*, from the congestion of blood. Certain it is, that the liver will sometimes be large from blood; and by active measures will be brought down, in a very short space of time, to the natural state.

But supposing you have used the remedies for inflammation, and that the disease does not cease, and that the size of the liver does not diminish, then you have reason to suppose that there is something more than chronic inflammation;—that there is a change of structure; and it is of no use to push on, with activity, the means for remedying inflammation. Indeed, you would only break up the constitution by them. It may be necessary, if there be pain and tenderness, to bleed occasionally, (either by cupping or leeches), to exhibit mercury, and to order low living; but if you push these things far, you frequently break up the patient's constitution, without affording him any relief. It is often necessary to support the strength well, and even to give the patient stimuli, in order to enable him to bear up against this organic disease.

With regard to the *signs* of organic disease of the liver, you may sometimes make it out very well, by the edge of the liver being well defined;—running across, and being hard, and even sharp. You will sometimes find that the most easy way of discovering an indurated liver, is not by pressing hard down around the region of the organ; but by putting your hand over it, and suddenly bringing down the fingers. Frequently the liver is an inch or two from the surface; and if you press it regularly, you may not feel it; but if you press the integuments down upon it, you feel it in a moment. Occasionally you may discover *tubercles* in the liver.

In all these cases, it would be quite fair to have recourse to iodine, in the form of hydriodate of potassa,—both internally, and rubbed

over the indurated part. I have seen large livers reduced by this means. I have seen livers reaching to the umbilicus, and below it, reduced by the steady use of iodine, and sometimes iodine combined with mercury. But it is frequently necessary, while you are doing this, to support the patient well;—especially if you exhibit mercury. Not only should mercury be given with caution, but you should support the patient well; because the dose that is necessary to do good, tends to impair the constitution. Iodine, however, may be made to do good without injuring the patient. Setons may, perhaps, be serviceable. This is the general treatment of diseases of the liver; and we will now speak of the post-mortem appearances.

On examining the liver after it has been in a state of common inflammation, you will find that it is the convex portion of the liver that is generally inflamed. There may be red points, lymph, and turbid serum upon it; and the peritoneum may perhaps be thicker than it should be. In chronic inflammation you will find adhesions; and the bands are very strong. Sometimes you will see white patches on the surface of the liver; and the peritoneum will become white, opaque, and soft. If the substance have been inflamed, there is usually a general redness; and the size of the liver is increased,—from the quantity of blood it contains. Sometimes the redness is only partial; and then the liver looks almost mottled. When the redness is only partial, then the red plates, mingled with the parts naturally pale, give it a mottled appearance. In cutting the liver, generally a large quantity of blood flows out; and you must remember that, without inflammation, the liver frequently suffers a great congestion of blood. In the disease called "purpura," there is great congestion of blood in the liver. After asphyxia, chronic bronchitis, all diseases of the heart, and all obstructions to the course of the blood through the heart or lungs, you will find the liver in a great state of turgescence; so that when you cut it, the blood pours forth, and the vessels look like sinuses. In infants who have been asphyxiated at birth, the congestion of blood in the liver is occasionally so great at the part under the peritoneal coat, that sometimes it will burst through it into the abdomen. Sometimes, in inflammation of the liver, there is hæmorrhage into the substance of the organ; and sometimes the blood will *rupture* the substance of the organ. I presume there must have been some degree of softness of it previously. You may find a great mass of blood, or several little collections of it; sometimes it is coagulated, and sometimes not; occasionally you may find it in the vessels, and sometimes not;—accordingly as it has oozed from one, or from several.

CHRONIC DISEASES OF THE LIVER.

With regard to chronic disease of the liver, you recollect that the liver, like the kidney, consists of two parts; the one sanguineous and red; and the other white or yellow,—containing bile. They are not divided; but throughout the liver there are two constituent parts, lying in juxta-position. Now sometimes it is only the *red* portion of

the liver that is hypertrophied; so that the organ is enlarged and red. Sometimes it is the *biliary* portion;—the bile-tubes are all in a state of hypertrophy; and then you have a *pale* liver,—a liver enlarged and pale. Sometimes, without being enlarged at all, it will be pale. The *red* part is *atrophied*,—the vessels shrink; and the *biliary* part is *hypertrophied*; or if not hypertrophied, it is *indurated*; or if not indurated, it remains as it was; but as it has a preponderance over the *red* portion, the liver looks *pale*. These changes sometimes occur throughout the liver, and sometimes only in spots;—so that here and there you have one portion of the liver firmer and redder than it should be; while, perhaps, in other instances you have the *biliary* portion hypertrophied here and there,—giving it a mottled appearance.

GIN-LIVER.

Sometimes the hypertrophied portion of the liver gives you the appearance of white lines running along it; and sometimes of granules,—varying in size from that of pins' heads, to that of hazel-nuts. There is a difference of opinion, among morbid anatomists, with regard to this affection; which was called "gin-liver," and which is the most common of all organic diseases of the liver. Dr. Baillie and others suppose that it was caused by minute yellow tubercles throughout the liver; and Andral imagines that it is a mere hypertrophy of the biliary portion. Cruveilhier has given a good delineation of this disease; and has called it "small brown tubercle." I suppose, as it is a "*gin*-liver" in this country, it is a "*brandy*-liver" in others. Perhaps "*alcohol*-liver" would be the best name. It occurs in spirit-drinkers in *one* country, just the same as in *another*. There is the same punishment for them all. I presume that the constant use of alcohol, induces a chronic change of the biliary portion of the liver;—causes it to become hypertrophied, and indurated;—just as any serous membrane will become (from other circumstances) indurated, opaque, and hard. This is the history of this particular matter.

You sometimes see this morbid change more in one lobe than in another. Sometimes the liver is increased altogether; and sometimes, instead of being *increased*, it is *shrunk*. The liver generally feels very hard on the external surface. Frequently it is indurated in particular portions; but wasted on the whole. I think you find that, in by far the greater number of cases, a "gin-liver" is of a bright yellow colour; and generally there is more or less ascites. The peritoneum over the liver is generally more or less diseased. It is particularly opaque and hard.

FATTY DEGENERATION OF THE LIVER.

Perhaps the disease to which the liver is most liable, is that of becoming fatty. The liver is sometimes exceedingly fat. You know that the liver naturally contains fat and cholesterine; and these matters will sometimes exist in a great degree. When the liver has

degenerated into this fatty state, instead of being indurated, it is usually soft and flabby. Sometimes it is greyish or whitish; and such is the quantity of fat deposited, that it greases your fingers. When you cut such a liver, or handle it, your fingers become greasy; and in those parts which are the most fatty, it appears as if there were no blood there at all. This disease, like every other, will affect either the whole liver, or only portions of it. This state is frequently united with phthisis. It is a disease seen continually;—without the person having been addicted to drinking, or having imbibed any bad habits. It frequently occurs in young persons.

ENCEPHALOID DISEASE OF THE LIVER.

The liver is also subject to encephaloid disease;—to what is called "fungus hæmatodes." This is much more rare than either of the other forms of disease to which I have adverted; but when fungus hæmatodes has existed in the extremities, then it is very common for a collection of this nature to take place in the liver. Occasionally, I believe, encephaloid tumors are said to be found in the liver, without the disease occurring in other parts; but more frequently they are found in combination with disease of the extremities. These tumors are, of course, white; and sometimes there are tuberæ, producing an elevation on the external surface;—bumps. They are of various sizes;—some existing near to the surface, and some towards the centre of the organ; and when you cut them, you find they contain a brain-like substance.

SCROFULA, SCIRRHUS, AND MELANOSIS OF THE LIVER.

The liver is also subject to another disease,—to a new formation; namely, *scrofula*. Scrofulous tumors take place, from time to time, in the liver; and they are, of course, white. The encephaloid tumors look exactly like them. Cruveilhier has given some good representations of them. The scrofulous disease is sometimes mixed with *encephaloid* matter,—with "brain-like" substance; and sometimes there will be a mixture of *scirrhus* with it. I have frequently seen scirrhus in other parts, with scrofula deposited in its neighbourhood; and so it is in the liver. Occasionally *melanosis* exists in the liver;—the black deposit of which I formerly spoke.

The foregoing are the chief organic diseases of the liver. Besides inflammation, you may have enlargement from congestion of blood, or from abscess;—you may have the red part hypertrophied here and there,—so as to give the organ a mottled appearance; and indurated at the same time,—so as to give you red tuberæ;—"tubercles," as they have been called in this country; but I would rather say "tuberæ." Then you may have the *biliary* portion hypertrophied; and that is called "gin liver." In addition to that you may have encephaloid tumors, resembling the brain in structure, consistence, and colour; and perhaps with blood effused in them here and there. Lastly, you may have scrofulous and scirrhous tumors, and melanoid deposit.

As to the size which the liver may attain, Mr. Gooch, a surgeon, mentions that he saw one which weighed twenty-eight pounds. I have frequently seen it reaching into the pelvis. It is a curious circumstance, but you will sometimes meet with a liver thus enlarged, which has caused no suffering at all. The patient has never complained of pain; but has felt weak, and has wasted a great deal. This is particularly the case in women. I have frequently examined women in this state; though, during life, they were not known to have disease of the liver. They never drew attention to the abdomen; but merely said they were weak. It shews the necessity, when you cannot understand patients, of having them placed in bed; and of examining them from the throat downwards,—over the heart, lungs, and abdomen. In that way you will continually meet with something, which was not in the least apprehended.

HYDATIDS OF THE LIVER.

The liver is very subject to the formation of hydatids. The kidneys and the liver are the two organs of the body, which are most subject to the formation of hydatids. The true animal nature of these hydatids, has not, I believe, been pointed out in the human subject; though it has in sheep. In sheep they have been observed to have a contractile power; but this has not been noticed in human beings. The appearance, however, is so much the same, that one must suppose them to be real hydatids. They are sometimes inclosed within others;—like pill-boxes. Sometimes they are attached by peduncles, hanging one within the other; and sometimes they grow to the outside of each other. You will see a representation of them in Dr. Baillie's work. Sometimes they are attached to the liver externally;—they hang to it; but, generally speaking, they are enclosed in a cyst. Sometimes they are found in the middle of the substance of the liver. The cyst which contains them is usually hard,—even cartilaginous. I believe they have two coats; and when dead, they have no longer a globular appearance; but are like so many skins, or so much half-dried mucus. In sheep, I believe, they are seen to have a neck and a mouth.

I had a very remarkable instance of this description, in a lady who had laboured under chronic hepatitis for fifteen years. At last she began to cough, and to spit hydatids; and died. On opening her, I found a large cyst of these hydatids, attached to the concave portion of the liver, on the right side. In the middle of the liver, there was another sac filled with them. Ulceration took place, and they made their way through the diaphragm;—the cyst emptying itself partly into the air passages. Under all this the irritation was so great, that she died.

WORMS IN THE LIVER.

Worms have sometimes been found in the human liver; and a lumbricus has been found in the ducts; but I should rather think it

was a wanderer,—that it was not a native; but that being on its travels from the intestines, it lost its way.

In the diseases of the liver which we have now described, you can do nothing more than treat the patient upon the common principles of inflammation, endeavour to excite absorption by means of iodine and mercury, and support the patient's strength. As to the greater number of them, you cannot distinguish them during life. You can tell that there is organic disease, by feeling that the liver is very large and very hard, by the patient wasting away, and becoming sallow and jaundiced; and sometimes you find there are tuberæ (bumps) in the region of the liver; but very often it is impossible to say what exact structural disease there is. If you have seen fungus hæmatodes, or scirrhus, in other parts of the body, you may suppose the disease in the liver to be of that nature.

JAUNDICE.

The next disease of the liver of which I will speak, is one in which the secretion (instead of passing out properly into the intestines) is absorbed, enters into the blood, and tinges the skin and the urine yellow. I need not tell you that this disease, in common language, is called *jaundice*;—a term which is derived from the French word "*jaune*" (yellow).

In brutes it is called "the *yellows*." In medical language it is called *icterus*;—from its likeness to the plumage of the golden thrush. The word "*icterus*" is said to be the name of the golden thrush; by looking at which, like the Israelites looking to the brazen serpent in the wilderness, it was thought that those that had the disease would be cured.* You know that it was common, in ancient nations, for the cure of disease to be attempted by looking on certain things; and I suppose it had its origin from what occurred to the Israelites. The heathens fancied, when labouring under this disease, that if they looked upon the golden thrush, the bird would die and they would be cured. You will find that, in Latin, jaundice is termed *morbus regius*,—"the royal disease;" and the reason given by several writers is, that in this affection persons require all sorts of amusements, that none but kings or royal persons can command. It is also called, in Latin authors, *morbus arquatus*;—from the patient having the various hues of the rainbow (arcus). You will find it mentioned under another name,—*aurigo*. I presume this has its origin from *aurum*,—"gold." The word "*jaundice*" is simple, and a very fine name for "yellow." In the case of poor people it is called, in plain terms, *the yellows*; but if a lady have the disease, it is termed *jaundice*.

This disease is marked by yellowness of the skin, yellowness of the eyes (the conjunctivæ), yellowness of the roots of the nails, yellowness of the urine, and paleness of the fæces. You may have this

* "Moses made a serpent of brass, and set it upon a pole; and it came to pass that, if a serpent had bitten any man, when he beheld the serpent of brass, he lived."—Numbers XXI. 9.

disease without the fæces being pale; but speaking of the symptoms generally, the fæces are pale. The parts which are first seen to be yellow, are the nails and eyes; and they are the parts that remain yellow longest. It is simply for this reason;—the half-moon of the nails (as it is called), and the conjunctivæ of the eyes being naturally so very white, you discover in them the slightest tinge of yellow. The yellow is not always of the same cast. You know that there is a *bright*, a *dark*, and a *green* yellow; and some persons labouring under jaundice, are of a dark olive-colour, so that it borders upon green; and therefore you sometimes hear of "*green* jaundice." If a person be naturally swarthy, when labouring under green jaundice he looks very dark; and then he is said to have "the *black* jaundice;"—so that you have a *green*-yellow and a *black*-yellow. It is a contradiction of terms; but it shews the variety of hues under which the disease appears.

Occasionally it has happened that patients have "seen yellow." It was maintained, by some, that that was *always* the case. Dr. Pemberton says he saw this occurrence twice; and that, in both cases, the jaundice was not very intense. On the other hand, you will every day see cases of intense jaundice, without any yellowness whatever of the vision. Hoffman says also, that twice he saw patients, who declared that every thing appeared yellow. It has happened to me to have two patients labouring under jaundice, who made the same statement. In July, 1826, I had, in St. Thomas's Hospital, a case of icterus, where there was albugo of each eye,—particularly of the left. Into this eye ran two large red vessels, and with it the patient "saw yellow;" but the right eye, which had no inflammation before the cornea,—into which no large vessels were running, saw things in their natural colour. In 1827, I had another hospital-patient, who "saw yellow" with both eyes; and in him the conjunctiva immediately around the cornea,—quite at the edge of the orbit, was greatly inflamed. This morning I saw a patient labouring under jaundice, who says that, at the beginning of the disease, he "saw yellow." He does not know whether his eyes have been inflamed; but it is a fact that there are several pretty large vessels running, not quite to the cornea, but pretty close to it. When patients "see yellow," it is from the serum of the blood being conveyed before the pupil, through the cornea. It must be accounted for in that way. In the second case of this occurrence which I met with, I was prepared for inflammation of the eye, by having noticed what I did in the first case. I looked carefully at the man's eye, the insant he told me that he "saw yellow;" and I found, as I expected, that it was in a state of inflammation. Whether this will always be observed when patients "see yellow," I do not know; but it affords an explanation of the circumstance, and is worth investigating. If a person labouring under jaundice be blistered, the fluid from the blister is yellow; and the serous fluids within the body, are found to be of the same colour. It is worthy of remark, that the blood of jaundiced patients is loaded

with bile. Hunter thinks that the artificial mixture of bile with the blood, produces coagulation; but I think that a quantity of bile infinitely too little to affect coagulation of the fluid, may nevertheless be sufficient to give a tinge to the serum.

Besides these visible symptoms in jaundice, there are several others. You generally find patients complain of languor, and very frequently of drowsiness; but still more frequently they complain of a dead weight,—a load at the epigastrium, and of tenderness, and sometimes actual pain at the hypochondrium. In fact, this is a disease which every day occurs in conjunction with hepatitis; and is, in many cases, merely a symptom of it. There is frequently loss of appetite, nausea, and vomiting; and there is one curious symptom in the disease, which is very common indeed; and that is an itching of the whole surface. People say they "could tear themselves to pieces."

Jaundice, like so many other diseases, occurs both in young and old persons. Infants often have it a few days after birth, and some perhaps at birth; and the oldest persons are liable to it. In infants, it appears to be produced from the very slightest causes; and it is cured with the utmost ease. In general, it is a slight disease, arising from slight causes; and may be cured by slight remedies.

You will sometimes see yellowness of the skin, not as the result of jaundice, but in fever; namely, that which is called "*yellow* fever." The yellowness is not universal in this case. It occurs particularly about the neck; and it appears rather to arise from a disordered state of the blood, or an altered condition of the blood as to some of its constituents;—exactly as we see it in bruises. You may have a person yellow from bruises. After a certain portion of blood has been absorbed from an ecchymosis, a degree of yellowness remains; but that is not jaundice. It appears to be produced from some portion of the blood being absorbed, and other portions left. Occasionally, after the bites of certain serpents, and the infliction of wounds by the bite of certain animals, the skin will become yellow; but this does not appear to be jaundice.

Some people would appear to have a constant predisposition to this disease; and it may be hereditary. Persons who have been in warm climates, are much more predisposed to the disease than others. The *exciting* causes of it, are any circumstances that will produce inflammation and congestion of the liver. Whatever will produce hepatitis, or cause great congestion of the liver, will produce jaundice. It may arise, not only from cold and wet, and from long-continued heat, but also from the suppression of a discharge; by which a congestion of the liver will be produced. It will arise from any thing that will cause even a mere excess of bile; for occasionally the fæces, in this disease, are not white. Bile passes into the intestines; but so much is secreted, that all does not escape; and a portion goes into the blood. Malaria seems to have a tendency to produce it in hot climates, and in the hot seasons of other

climates. Persons exposed to the influence of malaria, are very subject to have more or less jaundice among them, as well as other hepatic affections.

It may be produced by a variety of *local* causes;—any thing which will cause pressure upon the parts through which the bile is conveyed. Mere costiveness has been known to give rise to it. Tumors occasioned by an enlarged pylorus, or by an enlarged head of the pancreas,—tumors of the omentum,—diseases of the liver,—the lodgment of a calculus in the ducts, are also common causes of this disease. If a portion of liver becomes harder than it should be, and perhaps rather enlarged, the bile may be obstructed in the liver itself. Sometimes pregnancy causes it. I have frequently seen jaundice in pregnancy;—not, however, as the result of pregnancy; but as the result of inflammation of the liver; and which went away under the treatment for common inflammation, while the pregnancy went on. It is supposed that it may be occasionally produced by thick bile; but if you do find the bile inspissated, there is no proof that it is the cause of the jaundice; for if there be any obstruction to the bile, the latter, by its continuance, will become thicker than it should. Where the fluid parts are absorbed, the bile may be inspissated; but there is no proof that this is the *cause* rather than the *effect* of the jaundice. It has been known to be caused by a lumbricus sticking in a duct of the liver. I mentioned, when speaking of worms in the liver, that a lumbricus has occasionally been seen, which had lost its way, and wandered into the liver; and if it stick there, it may cause jaundice. If the ducts themselves become thickened by chronic inflammation,—if they become hypertrophied, their canal may be so much diminished, that the bile cannot easily pass; and consequently you have jaundice. I have seen jaundice from a great many of these causes; and, in 1829, I met with a case, in which it was occasioned by a great number of fatty deposits, all round the ducts. Sometimes the ducts are impervious from original malformation. There are a few instances of this upon record. It would appear sometimes to be produced by spasm. I have known some persons, on eating certain articles, to be seized with violent pain at the pit of the stomach; and the next day an attack of jaundice has appeared. It has been produced by mental causes. Many persons have become yellow from fright. I believe that, in general, people from fright look *blue*; but sometimes, from being exceedingly frightened, persons will have a fit of jaundice. Occasionally the disease has arisen, not from terror, but from long-continued grief and anxiety of mind.

When the ducts have been obstructed, they are generally larger than they should be; and Dr. Heberden is said to have seen them dilated to an inch in diameter. Sometimes, however, no obstruction is found. I have opened several persons who have died, not *from* jaundice, but *with* it, in whom I could see no obstruction whatever; and Sir John Pringle mentions, in his work on Diseases of the Army, that one of the army-surgeons told him of a case of jaundice,

in which there was no obstruction; but in which the slightest compression caused the bile to flow.* Andral, I find, says that he has seen the same occurrence.

You may produce this disease artificially, by opening the abdomen, and passing a ligature round the intestines, a little below the ductus communis choledochus. Portal has done this (he says) in six dogs; and they all became jaundiced. If you tie the lymphatic duct, the same circumstance will occur; and the absorbents of the liver have been seen, after such an experiment, to become loaded with bile. It has been said, however, that the blood from the lymphatic veins was found, in such an experiment, to stain paper yellow;—much more so than the blood from the choledochus. There was a doubt at one time whether, in jaundice, the bile found its way to the blood by means of the absorbents, or by regurgitation to the veins. A short time ago, it was not supposed that the veins would absorb. Before the absorbents were discovered, it was supposed that the veins performed that office; but afterwards, no one allowed that they would absorb at all; and now again it is said that they *do* absorb.† While it was believed that the veins did *not* absorb, some contended that, in jaundice, the absorbents took up the bile; and others contended that it worked its way into the veins. Experiments were then made; and it was observed that the absorbents of the liver were loaded with bile; and that the *lymphatic* veins were more tinged with it, than the *jugulars*. If the veins absorb as well as the absorbents (properly so called), we may suppose that, as the greater portion of bile which found its way into the whole system of blood, passed through the lymphatic veins, those veins would contain a greater portion of bile than any others.

With regard to the *prognosis* of this disease, it must depend entirely on the cause. Jaundice is nothing more, in most cases, than a symptom of some disease; and according to the nature of that disease, must be the prognosis. Some are very ill in jaundice, and die *with* it; and others labouring under it go about with little indisposition;—they scarcely know that they are ill; they only look very yellow. In that form of jaundice in which the yellow verges to green, and which has been called "*green* jaundice," recovery is very rare. When you see an individual labouring under jaundice, with his eyes yellow enough, but with a skin of an olive-hue, you may (without asking a question) fear that the individual has a disease, from which he will not recover. Dr. Baillie says that, in the whole of his practice, he never saw more than two persons recover from green jaundice. Generally, where the jaundice is of this green hue, there is some organic disease of the liver;—either of the whole or of a portion of it.

The disease sometimes lasts a very long time. The fæces are in general white; but very often they are bilious. Dr. Baillie says

* "Observations on Diseases of the Army. By Sir John Pringle."

† Consult, on this subject, Dr. Graves's Lecture on the Absorbents; of which a new edition has been published.

that, in green jaundice, the fæces are usually white,—as in other kinds of the complaint; but he has often seen them very pitchy. He says that there is but little pain felt; that there is seldom any ascites; and that he seldom knew it arise from intemperance. The reason that he assigns for the latter circumstance is, that it so frequently occurs in women. Some women, however, are intemperate enough. He considers it as a symptom of something which is fatal. Dr. Cheyne mentions that the jaundice of children is dangerous, if it be of a saffron-hue. In children the complaint is generally trifling; but sometimes it is not. Mr. J. Pearson (a surgeon of great practice in London, a few years ago) says that he knew a family where there had been eleven children, ten of whom died of jaundice within the month;—the disease having begun a few days after birth; and that the eleventh died of the same disease at six years of age;—evidently shewing the hereditary nature of the disease. What was the cause of it in this family, I do not know.

In the *treatment* of jaundice, you have first to consider whether any inflammation exists;—whether it is a case of hepatitis; and if it be, you must treat it on the common principles of inflammation of the liver,—in proportion to the weakness on the one hand, or the strength on the other. You will find that, in cases of jaundice, mercury answers better than any other purgative. I have frequently made experiments, and have exhibited common purgatives in some cases, and mercury, so as to affect the mouth, in others; and I am sure that patients have recovered more quickly by the latter mode, than by the former. In mild cases, however,—where there is only congestion of the liver,—the disease will yield to common remedies; and many cases will get well of themselves. But if the disease be more severe, it would be right to employ mercury, and perhaps to bleed in the arm. The disease may be characterized more by spasmodic pain than by inflammation. There may be occasional pain at the pit of the stomach, or on the right side, rather than constant pain and tenderness; and in that case the hot-bath and opium are among the best means. But in such cases as these, if you find the patient's pulse constantly quick and strong, one of the best antispasmodics you can employ is bleeding. If you find that the pain is not constant,—that it comes on at intervals, and not with a constant severity, you may expect that the disease is, to a certain extent, spasmodic; and there opium and the hot-bath will be very useful. But if there be general tenderness besides, and bleeding be at all admissible, it will answer exceedingly well. It will be more effectual, and much better, to combine the opium with a full dose of calomel. This will prevent constipation, and produce a free discharge from the alimentary canal. In these spasmodic cases, in addition to the common treatment for hepatitis, you should give a large dose of calomel (ten or twelve grains), and a few doses of opium;—perhaps two grains, or more, in a dose. A poultice over the part is also very useful.

This sudden pain with jaundice, is no proof whatever that the

case is one of gall-stones. Where there is no jaundice at all, but where a patient is seized with sudden pain at the pit of the stomach, many persons say he has gall-stones; and if, in addition, there be jaundice, then they consider the matter as certain. But mere spasm of these parts will produce this violent pain, and perhaps giddiness likewise. You may suspect that there are gall-stones, but frequently you have all the symptoms without it; and you have no right to assert that a person has gall-stones, unless you see them pass, or they have been discharged. When you consider that, from eating something which is indigestible, a person will be seized with violent pain at the pit of the stomach, and the next day will have an attack of jaundice, you see clearly that this occurrence may be produced without the presence of gall-stones;—you see that it is obviously caused by something which has irritated the parts.

You will find the greater number of cases of jaundice yield to purgatives, or to the treatment for hepatitis; and if you find such severe pain as I have now mentioned, anti-spasmodic treatment will generally get rid of it. But the disease sometimes lasts a long time, —becomes *chronic*; and it is necessary, after you find no more pain, —no tenderness on pressure, to make the patient move about;—to make him take free exercise, to have the parts well rubbed, to recommend the use of the warm-bath, to exhibit mercury,—so as to produce a mild affection of the mouth, for a greater or shorter length of time,—and to make a free use of purgatives. When the disease has become chronic, it will frequently go away under the use of these means. The parts seem to fall into an atonic state. Supposing that the affection continues in spite of all these means, then you will generally have reason to suspect that there is disease of the liver. If you find induration or enlargement of the organ, or a degree of ascites, or any kind of dropsy; if you find persons waste more and more; and especially if you find the tinge become green, after having been the plain ordinary yellow;—then you must form an unfavourable prognosis, and suspect disease of the liver. In the case of enlargement and induration, it is pretty well proved; and then the remedies for diseased liver should be employed. Setons over the part, and the exhibition of iodine, will be the best means that you can employ; and you must keep up the patient's strength, as well as you can.

With respect to this chronic jaundice, there is a curious case which I stumbled upon in Van Swieten's work; where it was cured by making a man imitate Nebuchadnezzar. Van Sweiten says that he persuaded a poor man, in an obstinate case of jaundice, to live upon grass for two years, except during that part of the winter when there was none to be got. He made him eat the tenderest grass, and also that which was first mowed; and he made him take that which was in flower. The man "confessed that, for some time, this diet did but little please him; but after a time he was well contented, and could easily distinguish the best pastures by the flower of the grass." This I can imagine. At last he became a general nuisance

to the farmers; for they found that he had so large an appetite, that they drove him first from one field, and then from another. This is Van Swieten's own account. He says he was obliged to eat his diet secretly; and that the farmers, finding he had so large an appetite, often gave him a quick repulse. The man, however, was perfectly cured.

BILIARY CALCULI.

It may be well to say a few words respecting gall-stones. We can do nothing to dissolve them; but when they are passing, we may mitigate the patient's pain. It is said that, when they pass, the pulse is not quickened, as in inflammation; but that, on the other hand, it frequently becomes slow. I believe that this is generally the case; but the same circumstance will occur in a case of pure spasm. Sometimes, however, the pulse is increased to above a hundred; there is sudden pain in the part; and there is vomiting. Sometimes there is *great* pain, which is relieved by pressure;—it is mere *spasmodic* pain. Sometimes there is shivering. The patient has no increase of temperature; and the treatment will be the same as that for spasm; because you cannot say whether there is a stone or not. But if the patient have passed gall-stones before, and the same symptoms occur again, then you are authorized in concluding that they arise from gall-stones.

These stones are found in the ducts of the liver itself; they are also found in the gall-bladder, in the cystic duct, and in the ductus communis choledochus. If they exist in the cystic duct, of course they will not produce jaundice, unless they happen to be so large as to press upon the ductus choledocus, or the hepatic duct; but though they will not produce jaundice, yet they will obstruct the course of the fluid from the gall-bladder; and it will become distended, to a great amount, by its own secretion. There is, at St. Thomas's Hospital, a very extraordinary specimen; in which, from an obstruction in the cystic duct, the bladder went on secreting mucus, till at last there was what is called dropsy of the part; but no obstruction of the cystic duct can produce jaundice. There must be obstruction in some of the ducts of the liver,—in the hepatic duct, or in the ductus choledochus,—in order to produce jaundice; but gall-stones, are found in all parts;—not only in the cystic duct, but in the gall-bladder itself.

Gall-stones are seen of all sizes;—from mere grit, to the size of the gall-bladder itself. Gall-stones will very often pass without any pain at all; for I have found them in the motions, without any pain having occurred. If they are very large, they will occasionally produce no pain;—provided they lie still, and do not attempt to escape; but if nature make an attempt to get rid of them, the pain is very considerable. Dr. Heberden mentions that, in the gall-bladder of Lord Bute (the preceptor to George the Third), a stone was found which weighed two drachms; and yet that it caused no symptoms. They were surprised to find the stone there. The *quantity* of stones

found will vary, from one to an immense number. It is said by Dr. Baillie, that a thousand have been found at once in the gall-bladder. The preparation is now to be seen in Dr. Hunter's collection. An incision is made into the bladder, to shew that it is crammed full of stones. Dr. Baillie has given a representation of the case. I once took out of the gall-bladder of a patient at St. Thomas's Hospital, between three hundred and four hundred stones; which had given rise to no symptoms during life. The patient had not complained of the least pain; nobody knew that there was any thing extraordinary in his inside; and he died of a very different disease. Nothing is more common than to open persons who have died of disease unconnected with the liver, and who have never complained of a pain in the side; and yet to find several gall-stones.

These biliary calculi are sometimes rough, and sometimes smooth. They acquire a smooth surface from lying and rubbing against each other; but then this very same circumstance causes them to be angular. They have a sharp corner and edges; although the surface between the angles may be perfectly smooth. Those in the centre are generally oval; and Dr. Baillie says that he saw one the size of a hen's egg. They will pass through the ducts even when very large; for the ducts will dilate incredibly. We know that the female urethra may be dilated to so great an extent, that a large stone may be extracted from the bladder, without an incision. A very large calculus has been known to pass through the ductus communis choledochus, without ulceration having been discovered after death. I mentioned that Dr. Heberden states, that once the ductus communis was distended to an inch in diameter; but not unfrequently, when the stones are large, they will escape by an abscess,—just as pus will do from the liver,—either externally or internally. Adhesions may take place externally, between the gall-bladder and the parietal peritoneum. An abscess forms; and the stone comes out through the abdominal parietes. But, more frequently, adhesions take place between the bile-passages and the intestines; into which the stones escape, and are discharged by stool.

It is astonishing how very large a calculus nature will get rid of, and yet the patient do well. A calculus two inches and a quarter in length, three and a quarter in circumference, and weighing one ounce, two drachms, twenty-three grains, was discharged from a person, who lived after it, and did perfectly well. The case is recorded by Dr. Letsom, in the first volume of the "Transactions of the Medical Society of London." Dr. Pemberton states that a stone has been discharged, two inches and a quarter in length, and one inch and a quarter in breadth. In the "Medical Gazette" for March, 1828, there is an account of a stone an inch and three quarters in length, three inches and a quarter in breadth, and weighing two hundred and seventy-eight grains. A stone measuring an inch and three-eighths in length, and three inches and three-eighths in transverse circumference, is mentioned in the twelfth volume of the "Medico-Chirurgical Transactions." It had passed by ulcera-

tion; but the individual died. There is a curious instance of one an inch and six-tenths in length, and an inch and one-tenth in breadth, which was expelled, and the patient recovered. As it went down the intestinal canal, it stuck in the sigmoid flexure of the colon; and there gave all the signs of strangulated hernia;—so that, before its escape from the intestines, it did serious mischief. Yet there had been no suffering previously. It was not known that the cause of the disease was a stone.

These calculi are most frequently found in the gall-bladder itself; next to that in the cystic duct; next to that in the ductus choledochus; and next to that in the hepatic duct. There can be no doubt, therefore, that they are generally formed in the gall-bladder itself. Some of them are white, others are black; some are black externally, and white internally; and some have a shining and semi-transparent fracture. As to their constituents, some of these stones appear to be nothing more than inspissated bile; and these are bitter to the taste, soluble in water, and burn to a cinder. But the greater part of the biliary calculi are not of this description. They are of an oleaginous character; and if you melt them, they will take fire, and burn like wax. The shortest way to ascertain their nature, is to scrape them a little; and they very soon melt. Some are resin, some are cholesterine, and some are picromel.

Now those kinds which are waxy (I only use the word in the common vulgar acceptation,—meaning "to burn like wax"), are of a greasy character, are laminated within, and are frequently crystallized. Sometimes, however, they are oleaginous. Generally they are in plates,—laminated; but sometimes there are crystallized radii, passing from within outwards. Occasionally they are a mere amorphous mass. Now and then they have been found to contain phosphate of lime; but when stones in these parts contain this material, it is doubtful whether they are biliary concretions. Two cases of this kind are related by Andral; but there had been such obstruction, that no bile could have entered the gall-bladder, for some time. The cystic duct was obstructed; and calculi appear rather to have been the result of a secretion of the inner surface of the gall-bladder;—just as stones may be found in the urinary bladder.

DISEASES OF THE GALL-BLADDER.

With regard to diseases of the gall-bladder itself, I may mention that it is rarely ulcerated. Occasionally its coats are very thick; occasionally it is hypertrophied; and it has been known to be completely ossified. Sometimes it will waste away; sometimes it will have tubercles in it; and sometimes there are hydatids in its substance. Now and then it has been ruptured. A woman came one day to St. Thomas's Hospital, and fell down dead; and on opening her, the gall-bladder was found to have been suddenly ruptured. Death, I understand, took place instantly.

DISEASES OF THE STOMACH AND INTESTINES.

Before I commence the consideration of particular diseases of the stomach and intestines, it may be advantageous to give a short general account of the morbid appearances observed in this part of the body. But, in the first place, I shall direct your attention to the varieties which are observed in the *natural* state of the parts;—according to the portion of the canal which you examine, and according to the age of the patient. If you examine the inner surface of the stomach and intestines of a living animal, that is making no effort at all,—so that its circulation is perfectly free, that surface is found to be rather redder than the inside of the cheeks;—the mucous membrane of the former, is rather redder than the mucous membrane of the latter. In some animals, after death, you will find the mucous membrane pale, or at the utmost only slightly coloured; but here, again, much depends on the mode in which the animal dies. If you kill it by asphyxia,—that is to say, if you kill it by putting a stop to respiration, these parts will become of a very red colour, or very dark; and there will be great congestion of blood. But if, on the other hand, you kill the animal by hæmorrhage, these very parts will look paler than they were during life. The internal surfaces of the body, are liable to exactly the same changes of colour as the outer. You know that, if a person die from strangulation, the surface of the body will perhaps be of a dark colour,—more or less red; whereas, if he be bled to death, he will become pale. Now we are to generalize these changes; and be prepared to expect circumstances quite analogous in the inner surface.

If we look at the stomach during digestion, or if we look at the inner surface of the upper part of the small intestines during chylification,—when their great function is going on,—we shall find the parts redder than at any other time. This, of course, will occur at different periods of the day;—according to the shorter or longer time that has elapsed, since food was taken into the stomach. Any obstruction to the return of the blood, will make these parts redder than they should be; and perhaps darker. Hæmorrhage may take place from the inner surface of the stomach, or from the inner surface of the intestines,—from the great accumulation of blood; and as impediments to the circulation are very common just before death, you, more frequently than not, find these inner surfaces red and dark-coloured;—at any rate, *partially* so.

I believe I mentioned formerly,—when speaking of deceptive appearances with regard to inflammation,—that you may produce these changes at pleasure, accordingly as you examine a body a *longer* or a *shorter* time after death;—having first placed a certain part in a dependent situation, so that the blood may gravitate in a certain direction. If you place a certain portion of the intestines in a dependent situation,—lower than the rest, the blood will of course gravitate to it; and if you allow a long period to occur before you examine the intestines again, according to the length of that period

the situation of the parts, and the quantity of blood in the body, will you (cæteris paribus) find them darker. From the natural arrangement of the parts, you will generally find that those portions of the intestines which are in the pelvis, are of a darker colour than the others; and you find that the *posterior* surface of the stomach, is darker than the *anterior*;—merely from the gravitation of the blood; and, of course, darker and darker will the appearance be, according to the length of time before you make the examination. If the examination be delayed for a great length of time,—so that decomposition takes place in any degree, and the blood is allowed to transude from the blood-vessels, you will see extensive patches of red; and you will see stains along the course of the veins;—just as you observe on the external surface. If a still longer period transpire, you will have the whole of the parts red together. If the blood completely transude from the vessels, it will dye the whole substance; and from the solid portions being decomposed,—melted down into a mass, you will actually find more fluid than the blood itself will afford.

In persons in whom the intestines have been diseased during life, you will find them of a paler hue lower down, than higher up. The lower down you examine them, the greater generally is the paleness. They are also pale in youth, and in the young adult period; but in the fœtus, these very parts are naturally of a rosy hue; and in old age they are of an ash-colour; and not only so, but the veins are seen to be very large. These are the chief varieties as to *colour*.

But we must recollect that there are, likewise, different appearances, with regard to *thickness*. The mucous membrane is naturally thickest in the duodenum, and thinnest in the colon; and the mere circumstance of an accumulation of blood, just before death, or after that event, will occasion it to appear thicker than it should be,—without any disease of that particular part; while it always appears thinner in persons who die in a state of anæmia,—who are bled to death, or who have not rallied a little for some time before death, or who die suddenly in an emaciated condition. There is a great difference, too, in the *consistence* of the mucous membrane in different parts. Generally those which are by nature *thickest*, are also by nature *firmest*. At the pyloric end of the stomach, you will find the mucous membrane always thicker in health, and more consistent, than at the other extremity; and it is a natural circumstance for the mucous membrane to peel off, in large portions, from the inner surface of the stomach.

The consistency of the mucous membrane varies, according to the time at which you make the examination. It always becomes less, in proportion as time elapses after death; and, more particularly, if the surface of the stomach be exposed to the air. If it have immediate contact with the air, it loses its consistency much more quickly than it otherwise would. It is also exceedingly variable,—according to the quantity of gastric juice which the stomach contains; for the gastric juice will soften the inner surface, and indeed the whole stomach.

This softened state has been seen, very frequently, in persons who have died in perfect health. Where they have been suddenly destroyed by mechanical violence, or by any violence not acting till the moment of death, the mucous membrane of the stomach has been found softened; whereas, in persons who have been weak, and in whom you would suppose such softening might occur from disease, you continually find no such appearances. It has also been found, that not merely the mucous membrane, but the whole of the coats of the stomach together, have been softened in these circumstances; and even perforation has taken place; and still further effects have been observed in the other abdominal viscera, from their immediate contact with the part in which perforation took place. On this account it was supposed, by John Hunter, that the gastric juice will not act on a *living* part; but that it has the power of acting on *dead* animal substances; and that, therefore, it will act on the stomach, when life is no longer present to resist it. There has been a great difference of opinion on this point. When it was first promulgated, it was doubted. It was afterwards believed; but many French writers again doubt it; though I believe we shall see no good reason to suppose it doubtful, if we consider that, at the same time, the parts of the stomach, with which the fluid comes in contact, are softened; and it is singular that this softening particularly takes place at the posterior part,—where the gastric juice must chiefly have gone. Thus we may have considerable morbid appearances, without any previous disease;—simply from the effect of the gastric juice. At any rate, it is considered that, when the stomach is softened, we may be justified in saying, that the appearances are simply the effect of death;—whether the individual was in health before, or died from an affection of the stomach; and whether it is at the posterior end of the stomach or not; and whether, at the perforation, the parts are rubbed off or not.

Many morbid appearances take place in the intestines, particularly in the mucous follicles. We are to remember that, in children, the mucous follicles are, proportionately, more distinct than in adults. You will remember that, with regard to hypertrophy of the heart, I mentioned that the walls of the left ventricle are naturally thicker in children, than in adults; and many parts in children have been supposed to be hypertrophied, when the greater proportionate thickness of them was simply a natural circumstance. Now the mucous follicles, as I have just observed, are much more distinct in children than in adults. In fact, in healthy adults, they are not particularly seen, except in the cœcum and duodenum; and sometimes, again, at the lower part of the ileum; but in children they are generally distinct enough, through the whole length and breadth of the intestines. These mucous follicles are often seen to be very large after diarrhœa, and other diseases attended by irritation in the alimentary canal; but sometimes they certainly are very large, without our knowing that the individual had suffered any previous disease of the alimentary canal.

There can be no doubt that a degree of inflammation may exist in the alimentary canal during life, and yet leave no marks after death. It may happen that the bleedings which were instituted, have taken away the redness of the part, and left it perfectly pale; although the powers of life were destroyed by the disease, or (as in some cases) by the remedies. At any rate, it is possible for the disease to kill; and yet for no redness to be discovered after death. We see a similar occurrence upon the surface of the body, when patients have had erysipelas at the time of death. It is not uncommon to see the parts far less red than during life; and perhaps they are not red at all. Again, we see that redness may exist in all these parts, without any inflammation whatever;—that it may be the result of decomposition, or of some mechanical impediment. If the redness be of an inflammatory nature, or if it have been produced by inflammation, it ought to exist in the minute vessels; but still it is to be remembered that redness may occur there, as well as in the large ones, from mechanical obstruction. If the redness exist only in the larger vessels, it is mere congestion; which may arise from many causes, independently of inflammation. If you see mere over-distention of the *large* vessels, that cannot be considered inflammation; for if it were, it ought to exist in the *minute* vessels. But even though congestion of blood should exist in the latter, it would not be a sufficient reason for its being inflammation. When the redness arises from inflammation, the large vessels may be over-distended too; but in inflammation, the *small* vessels are *first* overcharged, and ultimately the *large*; whereas, in mechanical obstruction, the *large* vessels are first overcharged, and ultimately the *small*.

The redness may affect the mucous membrane simply in its continuous surface, or it may affect the villous coat, or it may affect the follicles, or it may affect two or three of these parts together. If it affect merely the villous coat, you have simple red points; and it is in the stomach and lower part of the ileum, that you chiefly find this inflammatory redness. This redness is of all degrees of shade. The villous coat may be transparent or not. If it be the follicles which are inflamed and red, there are frequently red circles around them; and perhaps also on the summit. If these widen and form a border, you have the follicles of a uniform redness.

The mucous membrane is sometimes found thickened; and sometimes it is firmer than usual, and will peel off in large portions. If this occur any where, it is sure to be met with in the stomach, and large intestines. When it is hypertrophied, sometimes it is as smooth as usual; but sometimes it occurs more at one spot than at another; and you will have the mucous membrane exceedingly rough;—that is to say, the hypertrophied parts being very partial, the membrane becomes rugged. It is polished enough; but still it gives a feeling of ruggedness;—it has depressions and elevations. Sometimes the hypertrophy is such, that portions hang into the canal;—you have it really in processes. When it is hypertrophied, there are various degrees of consistency, and various degrees of

colour. Sometimes, along with the hypertrophy, there is great irritation, and a great accumulation of blood. Occasionally you will have hypertrophy of the villi, and sometimes only of the follicles;—the follicles will be enlarged. When the latter occurrence takes place, sometimes the orifices of the follicles will diminish; and if they diminish, they will at last close, or nearly so; and then the secretion accumulates beneath, and dropsy takes place. If the contents happen to be solid, of course you cannot apply the word "*dropsy*;" but the follicles are distended with a soft, thin, caseous substance. Occasionally the mouth of the follicles increases very much. Sometimes they increase by ulceration; and these overgrown follicles are generally seen, like all other morbid appearances, at the lower part of the ileum, where the ileum ends in the colon.

Sometimes it is not the mucous membrane which is hypertrophied, but the cellular membrane under it;—the sub-mucous cellular membrane. Occasionally it becomes very bulky, or very hard. It falls into a state of scirrhus, and becomes as hard as cartilage. The disease which is called *scirrhus*,—a specific induration and hypertrophy,—frequently takes place. Sometimes, when it has begun there, the membrane on the other side becomes hypertrophied too; but I believe that when scirrhus affects the alimentary canal, it is the cellular membrane under the mucous membrane, that is first attacked. The other coats will sometimes remain healthy for a great length of time; but hypertrophy, ulceration, and other diseases, may take place. This particular affection of the sub-mucous cellular membrane, is very commonly seen at the pylorus; but it seldom takes place, except after the middle period of life has passed. In this affection, it is common for the orifice of the pylorus to become lessened; and the stomach behind frequently acquires an immense size. If hypertrophy and induration (true scirrhus) take place in the small intestines, it generally gives rise to stricture. The canal of the intestines where it is situated, will be diminished; so that stricture is the consequence. You may have a stricture from other causes; but this is a frequent source of it. This change is rarer in the small intestines, than in the stomach; and rarer in any part of the large intestines, than in the rectum. The rectum comes next to the stomach, in point of frequency of this affection.

Occasionally the reverse change takes place. Instead of the alimentary canal being *hypertrophied*, it will become *atrophied*;—it will become much thinner than natural. The coats will waste away. I do not mean that they will be destroyed; but they will become thinner and thinner, until the alimentary canal becomes quite transparent. Atrophy most commonly occurs at the splenic end of the stomach; and, next to that, at the lower end of the ileum.

Then, again, these parts sometimes *soften*. It is the mucous membrane that is, most frequently, the seat of this disease;—it will become quite pulpy. There are all degrees of softness, till it is absolutely lost; and the disease exists in various directions. When the mucous membrane becomes softened, sometimes the colour is

quite natural, sometimes it becomes pale, sometimes it is a dead white, and sometimes it is blue;—just as, you will recollect, is the case in the brain. I pointed out that, when the brain is softened, there is sometimes great blueness of the parts all around. The change of colour in the intestines, is sometimes produced by the loss of vital energy; and sometimes it is the result of inflammation. This softening is very common after chronic diseases;—after phthisis, for example. Sometimes, where we find this softening to be very great, there has been nothing more than anorexia (loss of appetite), and some degree of indigestion. It is common to find this state where persons have been dyspeptic. This affection is, in other respects, similar to the softening of the brain. Occasionally it is *acute*,—takes place rapidly and suddenly; and occasionally it appears to be a very *chronic* change. When it takes place as an acute affection, there is generally a red tongue and vomiting; but sometimes I have seen it where the patient, a short time before, was in perfect health. The same circumstance has been observed, with regard both to the stomach and to the intestines. Sometimes, in the case of the intestines, the disease follows diarrhœa.

This softening, though it is most usual in the mucous membrane, may extend to all the coats; and the intestines may look just like jelly. At first sight they may appear healthy; but when you come to examine them, you find them like so much jelly. This general softening of the stomach, is most frequent in the splenic end; and I presume that, very frequently, it really results from the operation of the gastric juice; but that, I imagine, is only one cause of the disease. Cruveilhier has given some good representations of this disease. In these cases you may brush the membrane all away. This softening is not to be ascribed to any decomposition of the part. In the case of the stomach, no doubt, it will arise from the gastric juice; but if it occur in other parts of the alimentary canal, it must be supposed to have taken place during life; for the intestines do not become soft by decomposition, unless a considerable degree of time has elapsed. The *brain* will soon become soft; but the *intestines* retain their consistency for a considerable time.

Some experiments were made at Stutgard (at least, cases were published there) in 1818, upon the effect of the gastric juice in producing this softening. Animals were examined before putrefaction had taken place, and the softness was seen in many cats and dogs; so that it appeared to arise from the gastric juice. If they were allowed to remain till putrefaction had taken place, even then there was not more softening, than in those which were examined sooner. The fluid taken from the inner surface of the stomachs of two children, who had died with this softened state of the mucous membrane, was introduced into the stomach of some dead adults; and it soon caused a solution of the solids; whereas, when it was put into the stomach of a live rabbit, it had no effect. I consider this a great confirmation of John Hunter's opinion;—that this softening of the stomach is mainly attributable to death. but it is said, that if the

eighth pair of nerves was divided,—so that the powers of the stomach were impaired,—then the gastric juice occasioned softening during life;—exactly as it did in *dead* animals. If these experiments were correct, they were exceedingly curious. There can be no doubt that common softening of the stomach and alimentary canal, is sometimes the result of inflammation; for we see symptoms of gastritis during life, and signs of inflammation after death. But gelatinous softening of the stomach, is frequently seen in children, who have not suffered from inflammation; but who have been in a general ill state of health;—who have been weaned when they were not able to bear it, and have not been supplied with proper food afterwards. Thus it appears occasionally in a cachectic state; and very often the parts all around are perfectly healthy.

I will now say a few words respecting *ulceration* of the alimentary canal. This is found most frequently in the two lower fifths of the ileum; and with respect to the large intestines, it is seen more frequently in the cæcum than in other parts. It is seen more frequently in the stomach, than in the jejunum, or the duodenum; but it is seen in all parts of the ileum more frequently than in the stomach; and it is seen more frequently in all parts of the large intestines, than in the two upper fifths of the ileum. This ulceration may exist in the centre of inflammatory spots, or in the centre of red patches. Sometimes we find diffused redness. A long tract of the intestines will be red; and we observe ulceration here and there. Occasionally ulceration occurs in parts more or less melted down; and frequently it takes place in hypertrophied follicles;—both in the glandulæ solitariæ, and in the glandulæ aggregatæ. With regard to the glandulæ solitariæ, when they enlarge and do not discharge their contents, they become distended, and are more or less firm;—so that they acquire a conical appearance. They then lose their conical form, and have a central depression on their top;—exactly like a variolous pustule. Their orifices sometimes simply enlarge; sometimes they ulcerate down merely to the level of the mucous membrane; sometimes they ulcerate below it; and then, if they run into each other, you have a frightful ulceration. Of course the ulceration may go on, till the alimentary canal is perforated;—till there is a way through it into the cavity of the peritoneum. Ulceration, like softening, may either be an *acute* or a *chronic* affection. Occasionally we see ulceration in the midst of gangrene. Gangrene is a rare occurrence in these parts; but occasionally there is ulceration and gangrene all around. Sometimes we see ulceration of scrofulous tubercles. There are scrofulous tubercles deposited under the mucous coat, in the cellular membrane; and sometimes we see them under the peritoneal coat, and cellular membrane. In this situation they will enlarge, ulcerate, and go through the same process as in the lungs. It is rare to find them ulcerate outwards, towards the peritoneum; but I have seen a few instances of this occurrence. Most frequently the tubercles ulcerate through the mucous membrane into the intestines. This is sometimes seen in phthisis. There has been a minute

abscess in the cellular membrane, under the mucous coat; and the latter has ulcerated through.

Ulceration is seldom the effect of acute inflammation of the *stomach*; but it is a common result of inflammation of the *intestines*. The ulceration is sometimes solitary;—you see only one ulcer; but sometimes there is an infinite number. In the stomach, however, they are seldom numerous. They are of all sizes; and they take all directions. Some extend down the course of the canal; and some transversely. Then, as to the edges, you find them just as various. Sometimes they are natural; sometimes they are very thick; sometimes they are very hard; and sometimes they are very soft. The nature of the ulcerations depends upon the depth of the ulcer. If only the mucous membrane be ulcerated through, the case is very different from what it would be if the cellular and muscular coats were ulcerated too; for then you would have peritonitis. There is no proportion between the depth and the length of the ulceration. The intestine between the ulcerations may be in various conditions. Sometimes it is healthy, sometimes it is unhealthy. Not only the mucous, but the cellular coat underneath, varies much as to its condition.

There is no doubt that these ulcers will heal;—just like ulceration in other parts of the body. Every now and then you will find ulcers in the intestines in various stages. Some are open ulcers; some are half cicatrized; and others are *entirely* cicatrized. You will find portions of the intestines which have evidently been in a state of ulceration, but which have healed; and it is very interesting to meet with an ulcer half healed; for then there can be no doubt of the nature of the affection.

Persons who are not known to be particularly ill during life, are sometimes found, after death, to have an ulceration in the intestines, or stomach. They have had some little illness; but perhaps no one knew of it;—they were in apparent health, when they were suddenly seized with violent pain in the abdomen; and they died from perforation having taken place, and peritonitis being set up. Occasionally this takes place where the patient is labouring under some other disease in the abdomen;—that disease not having been known to exist; but, more frequently, it occurs where persons have suffered from a gastro-enteritic affection. Mere softening will produce a perforation;—just as ulceration will do; and sometimes a slough will give rise to the same circumstance; though that is very rare. In brutes, perforation has taken place; and the coats of the intestines have sometimes lost their continuity by distention, occasioned by gases. In horses, this has been known to take place in consequence of vomiting; for vomiting will not occur in them, unless there be such a violent effort as is dangerous to animal life. It has occurred in human beings when the stomach has been diseased. If the stomach be thin, mere vomiting has sometimes caused perforation. Perforations, from these various causes are seen, most commonly, in the stomach, and particularly at the lower end of the

organ. There can be no doubt that some perforations take place after death; but when they do not, there is generally violent peritonitis.

Blows on the abdomen will sometimes rupture the stomach and intestines. You would suppose that, in all cases where violent peritonitis took place from this circumstance, the contents of the stomach would be effused; but that is not the case. It is said that sometimes, very little irritation has been produced, and only chronic peritonitis. But I believe the cases must be very rare;—at least, I have never met with one. Sometimes the opening has been completely blocked up by nature, by means of a piece of omentum or something else; and no mischief has occurred. Sometimes adhesions have taken place, and a fistulous opening has been the consequence; so that some persons have discharged the gastric juice from their stomach, while others have had an artificial anus. You know that, in the case of the rectum, these perforations will occur; and we have what is called *fistula in ano*. Sometimes one portion of intestine will perforate into another. Two portions lie together; nature produces an adhesion; one of them becomes perforated; and an opening takes place in the fellow convolution. Occasionally the intestinal canal has been seen perforated from without. When an abscess occurs in the liver, or a stone from the ducts or gall-bladder has got into the intestines, these parts will become perforated from without. Various tumors have been known to ulcerate into the intestines.

GASTRITIS.

Gastritis, or inflammation of the stomach, is characterized by an acute and constant pain at the pit of the stomach. This pain is increased on the slightest pressure; and it is likewise increased on swallowing any thing;—particularly if it be hot, or acrid. There is generally also,—provided the disease is violent,—a great sense of tightness across these parts. These symptoms arise simply from the *locality* of the inflammation; but there are others dependent on the *function* of the part which is inflamed. You have nausea, retching, and even vomiting itself;—especially when any thing is swallowed. Sometimes you have also hiccup (singultus). There is generally experienced a burning sensation; which, for the most part, extends up the œsophagus, and is felt even in the pharynx. It is not uncommon for the epigastrium itself (the external portion of that part of the body in which the inflammation resides) to be hotter than the rest. There is generally thirst, great anxiety, and not unfrequently a feeling of great debility. The pulse is quick, small, and perhaps hard; but there is a great variety in this respect;—just as you observe in inflammation of other parts. The acute form of gastritis, if it be violent and not speedily remedied, soon proves fatal.

You are carefully to remember that, very frequently, this disease is preceded by merely a spasmodic pain of the part. It is not uncommon (as I shall mention particularly when speaking of what is called "disorder of the digestive organs") for persons to be seized

with sudden pain at the pit of the stomoch;—running through the back; affecting respiration; drawing the patient together; perhaps relieved, at any rate not increased by pressure; not attended by a sense of heat, but perhaps by a sense of cold; and unattended by any great thirst. So far from the pain being increased by heat or stimuli, it is generally diminished by them.

This is evidently a state of spasm; but after it has existed for a longer or shorter time,—if it be not remedied, or if it do not cease spontaneously,—it very frequently degenerates into, or gives rise to, or is followed by, inflammation of the part. You will then find the treatment you were at first adopting, highly improper. The administration of stimuli does harm; and if you omit the common treatment of inflammation, the patient is very liable to slip through your fingers. You are carefully to remember, therefore, that you have two descriptions of pain attacking this part of the body;—the one entirely spasmodic, the other inflammatory; but that the spasmodic very frequently terminates in an inflammatory state.

Gastritis is produced, in the first place, by the common causes of all inflammations; cold applied to the body,—especially when the body is heated. Sometimes it is produced by cold applied to the inner surface of the stomach, when the body is over-heated. Sometimes, when a person is very hot and takes cold drinks, before inflammation comes on there is a state of extreme debility. Occasionally the power of the stomach seems almost destroyed; the person is very faint; the pulse is small; and sometimes death ensues without any re-action taking place. You will hear of ladies dying suddenly, when they have been drinking cold water, or eating ices, while they were hot. The danger does not arise simply from being hot; for the hotter you are, the more good does cold do; but it arises from the person being exhausted. It is not even the simple circumstance of sweating, that makes it dangerous for a person to go into the cold bath, or to roll himself in the snow,—which the Russians do when there is no necessity for it; but it is the circumstance of the individual being exhausted, that makes the abstraction of all stimuli dangerous. If you meet with a patient who has an affection of the stomach from exhaustion, the best mode of treating it, is to give a large dose of opium, together with stimulants. If the person recover from this state, it is possible that inflammation may not arise. But sometimes, without such a depression as this, the application of cold to the surface when the body is exhausted, may produce inflammation;—just as in other cases. The external application of cold may produce inflammation of the bowels. Occasionally gastritis is produced by the sudden cessation of gout. When gout suddenly ceases in an extremity, inflammation of the stomach will occasionally arise, and that of a very dangerous character. But another state of the stomach is frequently induced in these circumstances;—namely, a violent spasm of the part (gastrodynia);—a state to be treated, perhaps, by brandy. Gastritis sometimes occurs sympathetically with an affection of the kidney;—when the kidney

is severely affected in various ways. When a stone is on its passage from the kidney, the stomach generally sympathizes; so that vomiting occurs, and sometimes real gastritis takes place. It will sometimes arise from sympathy with the state of the womb. The womb, when diseased, frequently gives rise to nausea and vomiting; and sometimes the irritation may amount to inflammation. This state is very often induced by the passions of the mind. A sudden emotion of the mind, of a very disagreeable character,—great grief,—sudden surprise of an unpleasant description,—a sudden and severe shock,—will sometimes give rise to a spasmodic pain here ("spasm of the stomach," as it is called); and sometimes to actual gastritis. Great fatigue will have the same effect. Of course it is a disease that is easily produced by any acrid matter. Many poisons, properly so called, produce inflammation of the stomach; but any acrid matter whatever, or any stimulus, properly so called,—such as a large dose of cantharides, or corrosive sublimate,—or any thing else that can irritate the stomach, may produce gastritis. It occurs likewise in other diseases. In fevers, gastritis of more or less intensity is very common. You will recollect I mentioned that, in the fevers of hot countries, there is a burning heat at the pit of the stomach,—deserving the name of active acute gastritis.

On inspecting the stomach after death, the redness is very seldom universal. It is very seldom that the whole of the inner surface of the stomach is inflamed. Sometimes this is the case; but generally it only takes place at a particular part. When peritonitis exists, that portion which covers the stomach may be inflamed,—the same as any other part; but in general gastritis, properly so called,—gastritis independent of inflammation of the peritoneum,—merely produces local effects on the mucous membrane of the stomach; though occasionally it extends to the cellular membrane between the coats. This disease very seldom induces gangrene. I never myself saw such a thing; but occasionally gangrene does take place. Very seldom does it produce abscess; but occasionally an abscess has been found between the coats of the stomach. You are more likely to meet with gangrene of the stomach after acrid substances have been applied, than in any other circumstances. If caustic substances have been taken, then you may expect gangrene. A slough is produced, which may or may not be thrown off.

You must carefully remember, that this disease may arise from acrid or poisonous matters introduced into the stomach, without your being able to discover any trace of them. It is very possible for a patient to have vomited every thing which he took, or for the ingredient to have passed into the intestines, and so to have escaped from the body; and yet sufficient inflammation may have been induced to destroy life. Although it is very possible that death may ensue from things taken into the stomach, yet you are never justified in saying that inflammation of that organ,—that the various morbid appearances which you see there, have been owing to poison, unless you prove its presence;—unless you discover it in what has

been vomited;—unless you find it contained in the alimentary canal, or in what has been discharged, or in a vessel of the contents of which the patient clearly partook. If it were not for an accurate knowledge of this circumstance, you might suspect that poison had been taken, without there being any justifiable reason whatever for the opinion; for the appearances within the stomach, may be precisely the same as those induced by taking poison, or some other injurious matter; when it is simply common inflammation, and the effects of it.

As to the *treatment* of the disease, the first point is undoubtedly to discover the cause. It is of very great importance to know whether the disease has arisen from any thing taken into the stomach or not; because, if it have, your first object must be either to effect its removal, or to neutralize it,—to destroy its power. I need not say, that the most ready mode of emptying the stomach, is to employ a stomach-pump. This is much better than giving an emetic; because emetics add to the irritation, or they may fail. The most powerful medicines are those of an acrid kind. Sulphate of copper is one of the best; and, next to that, sulphate of zinc. These operate immediately, and produce little nausea. Ipecacuanha produces great nausea, and may not effect the purpose after all;—at least, there is less probability of its succeeding, than in the case of sulphate of copper. When you have recourse to the stomach-pump, it would be as well to employ an antidote. If a poisonous acid have been taken, it is better to pump in *magnesia*-water than *plain* water; but if an alkali have been swallowed, then you should have recourse to diluted vinegar. The best plan, in all cases, is to fill the stomach with warm water;—to pump it *in*, and pump it *out*, till the fluid comes out quite clear, and you are satisfied that nothing remains. Provided a stomach-pump is not at hand, an emetic should be had recourse to; but notwitstanding you have done all this, and emptied the stomach immediately, you will find it of the utmost importance to go on treating the gastritis, as though you had done nothing of the kind. After arsenic or corrosive sublimate has been taken, and the stomach has been washed out, and there is no fear from the immediate effects of the poison, gastritis may nevertheless exist, and destroy the patient; or, at any rate, produce great danger; and you must have recourse to the common treatment of gastritis.

When the disease arises from simple cold, or after poisons, it may be necessary to bleed generally or locally. Cupping can hardly be borne; but leeches should be repeatedly applied over the part; and when you cannot employ them any more, blisters should be had recourse to. You find it grateful to the patient to allow cold drinks; and there can be no objection to ices. There is intense heat, and a great sensation of thirst; and the greatest comfort imaginable seems to arise from cold draughts. The best plan is to consult the patient's feelings. If he like cold drinks, let him have them; or if he like ices, there is no reason why he should be debarred from them. You should follow the same rule as in inflammation of the surface;—change these *cold* drinks occasionally for *warm* ones, and let the

patient regulate the temperature. Of course is is necessary to keep the intestines in a free condition; and I should imagine it would be better to do this by clysters, than by any other means. The stomach should be left as quiet as possible; and therefore I would trust this part of the treatment entirely to injections. With regard to the exhibition of mercury in these cases, I hardly know whether it is necessary or not, or whether it would be injurious or not. I have occasionally administered it where I was afraid that death would take place, without seeing the stomach irritated by it; but if you remove the cause (which is something acrid), and have recourse to bleeding,—if you give the patient cold drinks, and keep the bowels freely open,—the inflammation of the stomach is, in general, disposed to subside.

Inflammation of the stomach is very common in many acute diseases. It frequently occurs in erysipelas; and is sometimes evanescent,—will go away without any treatment, if you keep the patient low; but occasionally it requires local treatment. In fevers you must look out for gastritis. In the continued fever of this country,—properly so called,—and many other acute affections, this disease is very likely to spring up; and therefore, in these affections, you should always, from time to time, examine the state of the abdomen.

Gastritis is much more frequently a *chronic* than an *acute* affection. When it exists in a *chronic* form, the symptoms are much the same as when it is *acute*; only they are less intense. There is a great sense of heat within the stomach, rising from the œsophagus into the pharynx; great thirst; tenderness of the part on pressure; loss of appetite; nausea; and frequent vomiting. The tongue is *generally* red somewhere;—either at the tip, the sides, or all over; but you may have inflammation of the stomach, more or less violent, without redness of the tongue. You must not depend on the tongue alone. You generally see redness of the tongue; but you are not to say that the other symptoms do not shew gastritis, because the tongue is absolutely white, or not much affected. In these chronic cases, there are generally dyspeptic symptoms;—such as a great flatulence, great acidity, and a sense of sinking at the pit of the stomach. The latter is a very common symptom; and, to remove it, people generally take wine and brandy, and make things worse. The want of attending properly to this point, occasions very absurd treatment. I have seen persons, in this affection, have draughts of æther and ammonia, and things of that description;—all of which may be grateful for a time; but which, as patients frequently themselves say, ultimately produce great uneasiness. It is always right, when you are treating dyspepsia, to ascertain whether there is an inflammatory state of the stomach; for that organ may be in a condition requiring stimuli of all kinds; or, on the other hand, requiring the application of leeches, and making all stimuli and effervescing draughts exceedingly improper. Many persons labouring under dyspepsia, clearly have gastritis; for there is great pain on pressure; and because

they feel a sinking sensation, they drink wine and brandy, and eat meat. I have seen them get completely well, by changing their diet,—without taking any medicine whatever; and, in other cases, by applying leeches.

A very slight degree of tenderness at the epigastrium, however, is not sufficient to make it necessary to apply leeches, or to lower the patient. When an individual is subject to violent fits of pain in the stomach (gastrodynia), or subject to occasional attacks, you always find that there is tenderness;—merely from the part being stretched. If you have spasms in the calf of the leg, you find the next day that the part is sore;—merely from the muscular fibre having been stretched; and if you do nothing to make it worse, it will go away. There is no occasion to apply leeches to the epigastrium, simply because it is tender. There has been, for a certain time, an attack of spasm; which has left a little tenderness of the stomach; and you will find it yield best to stimuli;—just as a slight degree of inflammation of the eye, is more easily dispersed by washing it with brandy and water, than by any other means. But if there be much tenderness on pressure, and heat extending up the throat, then stimulating remedies would be improper. It is also to be remembered that a sensation of heat in these parts, generally arises from the quantity of acid in the stomach; and that if you give alkaline substances you entirely remove it; but if you think it right, you can apply leeches also. If, however, you give alkaline substances, (such as magnesia and carbonate of soda), you will find that a much smaller number of leeches will destroy the acid. Frequently this is the result of an inflammatory state; and the best way to cure it is to employ leeches; but to prevent the acidity from doing much harm, you should give antacid remedies; or if there be morbid irritability, such a medicine as prussic acid will be of great service. But of that I will speak hereafter.

Chronic gastritis is an accompaniment of many other diseases;—just as it frequently takes place after *acute* gastritis. You find it very common, in diseases of the heart, for persons to have more or less gastritis; which, if it rise to any amount, aggravates all the other symptoms. You find tenderness on pressure; and this, perhaps, over all the parts; and you find that, some time before, the patient has had disease of the heart. So, again, it is by no means uncommon for a person in phthisis, to have more or less gastritic affection. In various chronic diseases, gastritis will come on from time to time, and requires to be remedied; or the symptoms of the original disease will be increased. It is well to ascertain, from time to time, the state of the abdomen, when the patients are labouring under chronic affections;—the same as when they are suffering under acute.

As to the *treatment* of the disease, it is simple enough. You should avoid stimuli, apply leeches from time to time, keep the bowels open, and remedy acidity.

ULCERATION OF THE STOMACH.

When gastritis has existed any time, it may perhaps ulcerate the stomach. Such an occurrence is by no means uncommon. I know of no symptom indicative of ulceration of the stomach; and have frequently met with it by surprise. I have known that the patient had chronic gastritis; but there was no symptom that led me to suppose that, in addition to gastritis, there was ulceration. The symptoms are the same in both cases;—tenderness, thirst, a sensation of heat there, dyspepsia, and perhaps emaciation. Sometimes you will find pain at one particular part of the stomach; but then you may have that without any ulceration. There is no certain diagnosis. You may fancy it to be the case, but your conjecture may be wrong; and you may find nothing but chronic inflammation.

RUPTURE OF THE STOMACH.

If the ulceration proceed to an aperture, there generally occurs, suddenly, a fresh set of symptoms. There is sudden pain in the epigastrium,—dreadful pain there; and, in a case which I saw, there was also intense coldness; so that the patient held a glass of boiling water to the part, without feeling it warm,—without being at all annoyed by it. He also drank water so hot, that I could not have put it to my mouth. You will find, when I come to speak of dyspepsia, that affections of the stomach are frequently attended by a want of power to generate heat.

This pain, after it has existed for a certain time, is generally followed by peritonitis. You will find a paper on this subject by Mr. Travers, in the eighth volume of the "Medico-Chirurgical Transactions;" in which he states that the diagnosis, in a case of this description, or in perforation of the intestines, would be sudden pain in one part of the abdomen (in the case of the stomach, at the epigastrium) radiating from the part; and he considers that the pain would never cease. In a patient of mine, where there was an aperture of the stomach, the symptoms were these. (I had never seen her before; but she was tall and very spare, and was said to have been long dyspeptic.) One day, after dinner, she was seized with a sudden pain in the stomach. It was impossible for me to tell whether this was more than a spasmodic pain; for it was not aggravated by pressure. I gave her laudanum, of which she took sixty drops: but finding no relief, she took more; and so she went on till, in a few hours, she had taken three hundred drops; and after that the pain ceased. It is not correct, therefore, to say that the pain never ceases. I afterwards found some cases published in France, and also one by Dr. Carmichael Smyth, in which the pain went away; and therefore you are not to be sure that the stomach and intestines are not ruptured, because the pain ceases. After twelve or eighteen hours, my patient again had pain enough; for the whole of the peritoneum became inflamed together. This inflammation could not be removed, and she died. From the particular

circumstance of the suddenness of the pain, the great prostration of strength, the smallness of the pulse, and the sinking of the patient, you may imagine that there has been a rupture of the stomach or intestines; and you are not to imagine it the less because, after a time, the pain goes off. If the patient live long enough, peritonitis occurs, and various symptoms take place;—rendering the case clear enough. You see that, from rupture of the alimentary canal, peritonitis has taken place; and a peritonitis that cannot be remedied; because there is a local disease which keeps it up. I believe I mentioned before, that these perforations sometimes take place without any sudden symptoms;—that, occasionally, *slow* peritonitis occurs, and gradually leads to ulceration.

In these cases of rupture, I should recommend the free exhibition of opium; and, when inflammation comes on, the application of leeches. These measures will lessen the suffering, although you can do no further good.

If the destroyed portion of the stomach owe its condition to an ulcer produced by the gastric juice, you will not find the edges so smooth, as in cases of simple ulceration; for the gastric juice does not act so very locally; but the parts all around suffer, and become soft. I believe that, where the stomach has been injured, after death, simply from the action of the gastric juice, there is a softened state of the parts immediately around. You will recollect that the latter circumstance occurs, particularly, at the splenic end of the stomach; whereas common ulcers take place any where; and in the latter case a patient, previously in good health, speedily perishes. Of course you are aware that, occasionally, notwithstanding that the stomach is ulcerated, yet no serious mischief arises; because nature produces adhesions around the stomach, and glues it to the liver, the peritoneum, or the omentum; so that, although the stomach is perforated, no aperture exists. Of course there is injury from the ulceration; but none from the perforation.

Pus is sometimes found within the coats of the stomach; and sometimes it has been seen diffused throughout the whole of that organ. Between the coats, there has been one sheet of pus; bounded by the peritoneum on one side, and probably by the mucous membrane on the other;—the muscular coat having been destroyed. But sometimes it has been found between the muscular coat and the mucous membrane, and between the muscular coat and the peritoneum. Sometimes one small abscess is formed;—a collection of pus takes place in one particular spot. Pus has been found, it is said, on the inner surface of the stomach; but when you recollect that this part is naturally covered by mucus, and that sometimes this is secreted in a great quantity, one hardly knows whether there is really an alteration in the secretion. Still there is no reason why the stomach should not form pus on the inner surface; and no doubt it does;—exactly like other membranes; especially as it has been found, occasionally, on the *external* surface. It is a very rare thing to find *fibrin* effused upon the inner surface of the stomach; yet

there is not a mucous membrane that may not form fibrin, under violent inflammation. You will find it stated in authors, that occasionally a false membrane (as it is called) has been noticed on the inner surface of the stomach. I believe this most frequently occurs in children. It is *before* puberty rather than *after* it, that fibrin is formed in the œsophagus. If you find a false membrane in the œsophagus, it generally terminates at the cardiac orifice of the stomach. So rare is it for fibrin to be formed within the stomach, that even if the œsophagus has produced it, the false membrane has generally been seen to end at the cardia. A layer of fibrin sometimes occurs in the throat; but it has not often been seen to extend lower than the œsophagus.

SCIRRHUS OF THE STOMACH.

Besides common inflammation and its effects, with which you are now acquainted, the stomach is liable to peculiar structural diseases. Scirrhus, open cancer, encephaloid disease, and melanosis, will occur in the stomach; and will all take place in various parts of it; but they most frequently take place at the cardia and the pylorus. This accords with the general rule that I mentioned;—namely, that the *orifices* of cavities are most frequently the seat of structural disease. When scirrhus exists, there may be pain at the spot which is affected; and that pain may go through to the back, and be increased on taking food. Besides pain, there may be all the symptoms of indigestion; and there may be great nausea and vomiting; so that nothing can be retained on the stomach. If it be the *cardia* which is the seat of the affection, the food is generally rejected immediately. I have seen an instance where, the moment the food reached the cardia, a heaving took place; the patient felt as if he were being destroyed by wind; and he said the complaint was nothing but wind. Sometimes the food will pass the cardia, and be rejected immediately, or five or ten minutes afterwards. But if it be the *pylorus* in which the disease resides, then the food will generally be retained for some time;—perhaps for half an hour, or perhaps more. There is no general rule for the time. There may be pain in the region of the cardia, or pain in the region of the pylorus. In the case of the cardia, you may find great difficulty in passing a probang into the stomach, for there may be a stricture at the part; but when the pylorus is affected, there is not only severe pain in that region, but at last there is a tumor. In that case, there is generally emaciation, and a sallowness of look;—such as I told you might be called *cancerous cachexia.* The vomited matter is sometimes very offensive;—sometimes bloody; and sometimes the eructations are exceedingly fetid.

Nothing, however, is more common, than to have dreadful disease in these parts, with scarcely any symptoms whatever. Every practitioner must have seen extreme disease in the stomach,—great ulceration of it,—decided cancerous and other malignant diseases of this part,—without any pain worth naming;—without any vomit-

ing till just before death, and without any other symptom than perhaps extreme weakness, paleness, and some obscure uneasiness about the stomach; and perhaps not even that. It is sometimes quite extraordinary to open stomachs, and see the disease which exists there, without any symptoms having taken place, or symptoms of a very slight character. When the pylorus is affected, you occasionally have jaundice, from pressure on the hepatic duct, or on the ductus communis choledochus. Occasionally in this disease, as well as in an affection of other parts of the stomach, there is vomiting of a very fœtid secretion, and sometimes of blood; and the blood will pass through the pylorus to the intestines, so as to appear in the motions.

There is not one of the local symptoms of this complaint, that may not be absent. Sometimes there is no vomiting; sometimes there is no pain; and it is only by a very careful observation,—indeed, by considering that there are no signs of derangement of other organs, that we frequently make up our minds that the disease is probably situated in the stomach. Sometimes there is very little more than dyspepsia; and sometimes people eat well, and are but little troubled with indigestion; but, at last, there is generally more or less hectic.

These scirrhous formations and cancerous ulcerations, as well as other organic diseases, may of course exist at any part of the stomach, as well as at the two extremities; and the symptoms are generally the same. The symptoms are much less likely to be observed in the stomach, if no obstruction is produced. If an obstruction be produced in the pylorus, then you have disturbance; or if it occur in the cardia, there is great difficulty of swallowing, and great pain when the ingesta reach the part. In the case of the pylorus, the stomach becomes so distended,—from the difficulty with which the contents pass out,—that vomiting generally occurs. When there is an obstruction at the pylorus,—either from scirrhus or any other disease, though scirrhus is the most common, it is generally noticed that the stomach acquires a very large size. It becomes immense, owing to the difficulty with which the contents pass through the pylorus.

If scirrhus exist generally in the stomach, the organ becomes very thick throughout, and its cavity is diminished. The mucous membrane looks puckered and ulcerated. When the disease is situated about the pylorus, it may occasion the stomach to become of an immense size; whereas, if it exist throughout the stomach, it may produce very great contraction; for scirrhus causes a shrinking, and produces a contraction of the parts all around, which spreads throughout the stomach; and, in the case of the pylorus, produces such a contraction there, that the food will not pass through. Dr. Baillie mentions that, occasionally, there is simple stricture of the pylorus or the cardia, independently of malignant disease. These two parts are subject to stricture,—just as the urethra is,—without any organic disease whatever.

With regard to the *treatment* of this affection, it is merely palliative. You have to support the patient's strength, and to give narcotics, in order to alleviate the suffering and vomiting. There is no medicine with which I am acquainted, that produces so much alleviation in these organic diseases, as hydrocyanic acid. It frequently *arrests* the vomiting for a length of time; but it always *lessens* it very considerably. If there be very great pain, it is necessary to employ opium, in order to reduce it. I have used iodine in these cases; and, I have thought, with a certain degree of advantage. In one case of scirrhous pylorus, I exhibited iodine and prussic acid together; and the disease appeared to stop. I have no doubt that the patient laboured under scirrhous pylorus; for I felt the tumor, and the patient had a sallow look, and vomited for a length of time. I gave him these medicines as a forlorn hope, and he was much better; but, in a great number of cases, I have not seen any such result as this; and sometimes there has been no benefit whatever.

With regard to stricture of the cardia, some good may be done by mechanical means,—by passing a bougie;—taking care not to pass one so large, as to occasion suffering to the patient. In the case of a contracted rectum, benefit has been said to be derived by the passage of a bougie. Although organic disease cannot be remedied, yet the effect of it in lessening the canal may be diminished; but great care should be taken not to employ it in such a way as to cause injury.

I believe I mentioned, with regard to stricture higher up,—stricture in the œsophagus, that sometimes there is a *scirrhous*, and sometimes only a *common* stricture; and that besides these diseases which can be treated only by a common bougie, the parts are subject to spasmodic stricture. The latter case occurs particularly in females; who will sometimes, for weeks together, be unable to swallow; and then they will swallow very well. These cases are to be treated by improving the general health, by the cold-bath, and by pleasant occupation of the mind.

CALCULI IN THE STOMACH.

Calculi have sometimes been found in the stomach; but, for the most part, they have been *biliary* calculi; which have got there either by ulceration, or by passing upwards through the pylorus. One which was examined was found to be cholesterine. I shall speak hereafter of concretions of the alimentary canal at large; but you will find that some authors mention, that calculi have been discovered in the stomach, of the size of a hen's egg. I never myself saw a stone in the stomach.

HÆMATEMESIS.

There is one disease to which the stomach is very liable; and that is hæmorrhage. Without the presence of any malignant disease,—without any *organic* disease,—frequently without any inflammation that can be discovered, and frequently without any danger whatever, a quantity of blood is discharged into the stomach. It is usually dark and in large clots. When speaking of "*hæmoptysis*," or "spit-

ting of blood," I stated that one could not infer, because in these cases the blood was black, that it was venous blood; for if arterial blood be poured forth into a cavity, and lie there, it will acquire a venous character. Its nature is not to be ascertained from the colour; but when you consider that patients will pass a vast quantity of blood in this way, it is easy to conceive that it proceeds from the veins, where the motion is very slow. If it came from the arteries, one cannot but conceive that patients would suffer much more depression. We know that a great quantity of blood is sometimes discharged from the pelvis,—flows from the lower part of the alimentary canal, attended with no very great loss of strength; and there the blood is, for the most part, black.

Hæmatemesis (from *αιμα, blood*; and *εμεω, to vomit*), is usually marked by nausea and vomiting;—if not by the latter, yet by the former; and by the sensation of a load at the pit of the stomach,—at the epigastrium and left hypochondrium. Sometimes, in addition, there is great pain there on pressure. The blood, besides being thrown up by vomiting, is frequently discharged by stool. This disease occurs very frequently in persons who are dyspeptic. I do not mean to say that this affection is a symptom of dyspepsia; but those in whom it occurs are frequently dyspeptic. It is an affection that occurs far more frequently in females, than in males; and it is common in women whose catamenia are suppressed or diminished. In some persons, it will return at intervals; and occasionally it is periodical.

The ordinary form of the disease,—like a great discharge of blood from the intestines themselves,—is for the most part without danger. Persons *may* die from it; but, for the most part, they recover. Still it may be a very dangerous disease. It may proceed from an ulcer, and you may not be able to stop it; but, for the most part, it would appear that great congestion has gradually taken place in the neighbouring parts;—in the stomach, and most probably in the liver and spleen, and all around; and then this blood, half out of the circulation, is poured forth; and nature is very much relieved by it. It is, for the most part, a passive hæmorrhage. It sometimes arises from an obstruction in the liver and spleen; as well as from the want of secretion by, or discharge from, the womb. It is frequently observed in hepatic and splenic diseases. The danger chiefly depends upon the source whence the hæmorrhage proceeds. An aneurism of the aorta has sometimes opened into the stomach, and given rise to the disease. Occasionally this hæmorrhage is only a part of the affection called *purpura hæmorrhagica*; of which I formerly spoke.

I once saw a patient die from this affection, in a minute or two. I am not aware that he had hæmorrhage before; but he had some pulmonary complaint. He suddenly fell back, and died in a minute or two. Blood came from his mouth; and, on opening the stomach, it was found to be filled to the utmost with blood; which formed a large mould of the organ. I could discover no disease whatever of the part, or any vessel that let it forth. Sometimes, in this affection,

the internal surface of the stomach is pale; and sometimes it is in a state of great congestion.

With regard to the *treatment* of hæmatemesis, it may be necessary to take blood from the arm; or it may be necessary to apply leeches plentifully all over the stomach, and then to order blisters. But for the purpose of stopping the hæmorrhage, it is best to give the patient cold drinks; and, if you can, iced water. You should give him scarcely any food; and not only take care that what he drinks is aqueous, but that it is as cold as he can bear it. The oil of turpentine is one of the very best remedies you can employ. I do not know that I ever failed in stopping hæmorrhage of the stomach with it. It should be given in a small quantity;—twenty or twenty-five drops, every six, or every four hours. If it should create sickness, you will find it of advantage to unite hydrocyanic acid with it. They may be given conjointly; or you may give the acid a few minutes first. The acid has not the power of stopping the hæmorrhage; but if there be any nausea, it enables the stomach to bear the turpentine much better. I have the highest possible opinion of *lead*, in passive hæmorrhage; but here you can apply the oil of turpentine to the spot which is the seat of the affection; and although I never saw it do good in hæmorrhage from the *lungs*, yet it is superior to lead in the case of the *stomach* and *intestines*. The effect of it, when it comes in immediate contact with the part, is very great; but still it is necessary to keep the patient perfectly quiet. I have had a large number of cases of this disease, within the last twelve months; and I believe every one of them has done well. I do not remember a case, where the turpentine had not a decided effect in stopping the hæmorrhage.

The foregoing are the principal diseases of the stomach,—with the exception of dyspepsia; which is so connected with an affection of the liver and alimentary canal, that I will bring them altogether under one name,—"derangement of the digestive organs;" and will speak of them on another occasion.

ENTERITIS.

We will now pass the pylorus; and consider, first, inflammation of the intestines. In simple enteritis,—supposing it to be active and violent,—you will have acute deep-seated pain; and this may occur in various parts of the intestinal region. Although the pain is constant, yet it is aggravated at intervals; and it is increased on pressure. It differs from "a fit of the gripes," as it is called,—"pinching and purging,"—in this;—that, in common "pinching," there are intervals of ease; and when the "pinching" is over the person is comfortable; whereas, in enteritis, although the pain comes on at intervals, yet it is constant;—although it is not of uniform intensity, yet it is always present. This is an important thing to observe; for I have seen persons seized with tormina, which required brandy, or at least laudanum, to assuage it; and then, gradually, the tormina became constant; and there was pain increased on pressure; whereas, before,

it was rather relieved by it. When this change takes place, laudanum and brandy would not only be useless, but would increase the pain;—so that bleeding would be required. I recollect one case, where I was with the individual the whole time; and the series of changes was quite manifest.

In this disease, where there is this sharp fixed pain, there is usually great costiveness. The abdomen, after a time, becomes tense; and, from the severity of the pain, there is anxiety of countenance. The tongue grows white, and the breathing is quickened. Nausea and vomiting soon occur; and if complete obstruction take place, you may have vomiting of fæces. This occasionally happens; and formerly a particular name was given to it;—"the ileac passion,"—*passio ileaca*. The patient lies on his back,—just as in peritonitis; with his body drawn forwards, and his limbs drawn up. The patient lies quiet; for if he move about, he increases the pain. A patient is often disposed to be restless throughout; but, for some reason, he cannot. In these cases the patient keeps his body still; but tosses his arms about. The pulse becomes quick; and it is generally small, and sometimes hard. It is generally in cases of this kind, that we have what is termed a *wiry* pulse;—that is to say, the pulse is as small and as hard as a wire. A thready pulse is one which is as small and as soft as thread. The tongue at last grows brown; and ultimately (provided things go on from bad to worse) the pain ceases; the patient will often bear pressure; the abdomen swells, and becomes very large; and if you place your fingers across it, and strike it, the sound is as hollow as that of a drum. The patient then becomes exceedingly restless, and delirious; the pulse becomes irregular, and very rapid; the respiration is also quickened; and death ensues.

After death, you will very likely find no effusion whatever; but mere redness. Sometimes, however, you will find an effusion of lymph upon the surface, and more or less serum;—from the peritoneal coat having suffered with the rest. Owing to the great congestion, a portion of the intestines will sometimes be almost black;—as black as any blood can be. This has continually been mistaken for gangrene, as Dr. Baillie mentions; and as I stated when speaking of inflammation in general; but you find that it resists the fingers in a way that gangrene would not. You know how mere congestion will make a person black in the face. But there *may* be gangrene; though it is a very rare thing. I do not recollect having seen it. The parts become lacerable like paper, as well as black; and they smell intolerably. Occasionally pus has been found in the substance of the intestinal coats. You have the mucous membrane within, and the serous membrane without, inflamed; but the chief seat of this inflammation,—producing this obstruction and this violent pain,—I believe is the cellular coat of the intestines. I have never seen the muscular fibre in a state of inflammation. It may be in a state of *hypertrophy*; but I have never seen it *inflamed*. Acute rheumatism is, for the most part, inflammation of the aponeuroses;—even when it appears to be the muscle itself which has been affected. Rheu-

matism, generally speaking, affects parts which are not muscular; but if the muscle be affected by it, it is only secondarily. We never have an effusion into muscle, or suppuration there, or any thing of the sort. It appears to me that it is the *cellular membrane* of the intestines, that is chiefly the seat of this disease; although the peritoneal coat, and the mucous membrane, may also be inflamed.

Enteritis is distinguished from *peritonitis*, by the obstruction that is produced,—the constipation; and the consequent effects of it,—nausea and vomiting; and also by the circumstance of the pain being fixed about the umbilicus, which is generally the seat of it; whereas, in peritonitis, it is diffused. This disease is caused by anything which will produce inflammation;—cold and wet applied externally, and cold internally; and it is induced by anything which occasions obstruction. If there be a hernia, and the part becomes girt, then you have enteritis. If the fæces become black and indurated, and will not pass, then you may have this disease. Whatever causes an obstruction, is sure to produce this affection; provided it continue sufficiently long for the disease to be set up.

When you are called to a patient in this disease, before you think of anything else, you must ascertain the cause of it. You must examine every part of the abdomen, and see whether there is not an umbilical, or a ventral hernia; for patients continually have symptoms of this description, because there is a hernia; and the hernia may be so small as to escape attention. A small portion of the intestines may slip down, without the patient knowing it. Great mistakes will occur, if persons do not remember that this disease may be the result of hernia; and that a patient may have hernia without knowing it. If there be a hernia, that will be treated in the way which the surgeon thinks best; but if there be not, the first thing which you have to do, is to bleed the patient well. You should set him as upright as he can be; and bleed from a large orifice without any mercy. You must of course consider the patient's strength; but you should bleed on till you make a decided impression;—till you knock down the pulse, and make him faint. After this has been done, a very large dose of calomel should be exhibited. A large dose will clear the stomach, as well as a small one; and it will be more effectual in purging. After it has been taken some time, other purgatives should be given; but immediately after it is administered, an active injection should be given; so that, if possible, they may meet half-way and combine; and then out goes the disease. You should first bleed very freely; because purgatives will not operate till you have done that. You should then give a large dose of calomel (such as a scruple) by the mouth; and then administer a strong purgative injection;—containing plenty of salts (salts and senna, if you choose), or extract of colocynth, or oil of turpentine. I would repeat the calomel in smaller doses;—say ten grains, every four or six hours;—giving purgatives, in addition, from time to time, till the mouth is sore; and in general when the mouth is sore, and the bowels are freely open, the inflammatory symptoms go away; and

as the obstruction frequently arises from mere inflammation, if you remove the latter by bleeding, and producing a mercurial affection on the patient, the former will subside.

It is also well to cover the whole abdomen with leeches. Twenty, thirty, or forty should be put upon it; and you should then give mercury till the mouth is sore, and follow it up by other purgatives;—such as croton oil, which is one of the best, and of which a drop may be given every two or three hours. Sometimes I have given a drop every hour. If these measures will not open the bowels, then you will find it of very great use to employ the smoke of tobacco. A tobacco-clyster is sometimes a dangerous thing; and you should only put a drachm to a pint of water, and throw up one-half of it, and watch its effects; but the smoke of tobacco is very manageable. There is a little apparatus for the purpose. You can feel the pulse at the same time; and regulate the smoke proportionately, at your discretion. Sydenham was very fond of this remedy; but not more so than it deserved. He says that the smoke of tobacco was, by far, the most efficacious of all the injections he knew. I know many practitioners who now employ this remedy, with very great success. If this fail, there is no impropriety in taking the patient out of bed, and throwing a few pails of cold water hard against the abdomen. That will sometimes open the bowels, when nothing else will. But where you find inflammation, and no mechanical cause that you can discover, the best mode is to treat it as an attack of inflammation; but in the most decided manner. You must take care to give purgatives as abundantly as the stomach will bear them, till they produce their effect.

This disease is called enteritis (from εντερον, *an intestine*; and "itis," —*inflammation*): because it is an inflammation of the substance of the intestines. But similar symptoms, in many respects, are produced by mere spasm;—that is to say, perfect obstruction, together with vomiting and violent pain, though pain of a different character; and then the disease is termed colic;—"enteritis," being essentially *inflammation*, but "colic" being essentially *spasm*. When the spasm ceases, however, then inflammation may come on; and you will then have a case of decided enteritis.

COLIC.

Having spoken of that description of obstruction of the bowels which is inflammatory, I now proceed to consider that which depends simply upon spasm. This obstruction of the bowels is called *colic* (from "the *colon*"). The symptoms of colic are, in the first place, constipation; with violent pain in the region of the intestines;—chiefly, as in other cases, about the umbilicus. This pain, unlike that induced by inflammation, is relieved by pressure; for there is no tenderness. The relief upon pressure is sometimes very great;—at any rate, pressure is always well borne. I have sometimes raised myself on tip-toe, and pressed on the abdomen with the whole weight of my body, and the patient has not complained at all; but, on the

contrary, has felt relieved by it. The pain is, of course, intermittent. It is not uniform; nor, indeed, is it constant. It will cease from time to time; the person will be perfectly easy; and then it comes again most terribly. In most cases there is vomiting; at any rate, there is nausea. The vomiting may be fæcal;—the fæces have been discharged upwards, as in cases of inflammatory constipation. In both cases, however, this circumstance is comparatively rare. The spasms, in these cases, are not confined to the intestines; for you will frequently see them in the abdominal muscles; so that they shall be drawn into large lumps. The recti muscles become particularly contracted; and you will sometimes observe retraction of the navel. Sometimes there is tenesmus; and sometimes there is great contraction of the sphincter ani. There is likewise violent pain felt in the loins; there is a high degree of flatulence; and there is no feverishness. It is carefully to be remembered that this state of things, however purely spasmodic it may be, will frequently, if not relieved, run by degrees into enteritis; so that, at last, you will have decided inflammation of the intestines.

The causes of this disease are, in the first place, the application of cold when the body is over-heated. This is a very common cause. Ingesta of various kinds, which disagree with the stomach, will give rise to it. Sometimes I have seen it occur from a person taking bad cyder; but in other cases it will take place, not from anything injurious in itself, but from an individual having an idiosyncrasy with regard to it. Obstruction from any cause will produce it. If there be a hernia, colic may be induced, in the first instance, before inflammation comes on. Hardened fæces is another cause of the disease. It is a common occurrence from any of those causes which, after a time, produce enteritis. Sometimes you will have enteritis first and then colic, and *vice versâ*; though the cause of both one and the other may be the same. A very frequent cause of it is a particular substance; namely, lead. In some persons, a very minute portion of it will induce this affection. A medical man told me that he had it, from a child's cot, newly painted, being placed in his bedroom. You see the affection, every day, in painters; and in persons employed in the manufacture of white lead. Individuals exposed to lead, in any way, are very subject to this disease.

After death, you may find nothing at all. Whether the disease has arisen from cold, from acrid ingesta, or from lead, you may find no morbid appearances whatever; but, on the other hand, you sometimes do. This is all a matter of chance. Sometimes the intestines are in a state of great contraction. Sometimes they are more or less inflamed; because the disease has terminated in that way. Sometimes you find the cause to have been something sticking in the way, or mechanical pressure of some kind; or you may find intus-susception,—one part of the intestine running into another. With regard to the appearance of the muscles, they are emaciated, thin, white, and pale. I have seen the muscles so flabby and wasted, that you could scarcely recognize their natural appearance. They have be-

come little more than tendons. When intus-susception has been the cause, you generally find that the upper part of the tract has passed into the lower. Dr. Baillie has given some good representations of intus-susception.

Colic may generally be treated, very successfully, by the exhibition of purgatives in strong doses. If the individual be stout, and the pulse will bear it, it is a good practice to bleed him. Bleeding, within certain limits, is an excellent anti-spasmodic;—spasms of various parts of the body will very frequently cease, on taking away blood. It is not always necessary in this affection; but it may be successfully had recourse to, if the pulse will *justify* it, even though it may not *indicate* it; and it may also act beneficially in preventing inflammation. It is very useful to give a large dose of calomel;—to administer a scruple repeatedly, after longer or shorter intervals; and after you see that it will remain on the stomach, then it is right to give some other purgative;—a strong dose of castor or croton oil, or sulphate of magnesia. One of the best purgatives is undoubtedly croton oil; and, if you choose, you may begin with it; but it will be of little use to give less than a drop. In severe cases, I would repeat it every hour or two, till it answered the purpose. Last summer I was called to a case, where the hot-bath, and every medicine in common practice, had been used, except croton oil; and even of that a dose or two had been given. But the case was very severe, and it was necessary to overcome the disease speedily; and therefore I ordered a drop every hour, or half hour, till it should operate. After about six doses, the bowels were freely opened; and the patient became perfectly well. An injection of oil of turpentine will also be found exceedingly serviceable. About three ounces, diffused in a pint of fluid, and forced into the intestines, is of great service. The warm-bath will afford great relief; but it is rather of use as a soothing measure, than anything else. The great point is to give good purgatives, and croton oil is certainly one of the best; but you may precede it, by way of laying a foundation for its action, by a large dose of calomel. At the same time, whatever good may be done, you should not omit clysters; and I think you will find the oil of turpentine one of the best. Some persons always combine opium with the calomel; and the opium may frequently do good by alleviating the spasm. This is a case in which opium may act as a purgative. By relaxing the spasm, it may cause the bowels to open; and it is thought that it very much reduces the pain, and makes purgatives and calomel stay better on the stomach. It is therefore said, that we ought always to give a larger or a smaller dose of calomel (a scruple or five grains, whichever you may have a fancy for) united with opium, and repeat it at certain intervals; but I have found the bowels open, just as well, without opium; and then there is no trouble afterwards. If you exhibit opium, after a time the bowels are disposed to become torpid; and I am quite sure that you will succeed as well without it, as with it.

When every thing has failed, I have known this affection of the

bowels overcome, by taking the patient out of bed, and dashing two or three pails of cold water upon the abdomen. In the particular case to which I have just alluded,—in which the patient had taken calomel till his mouth was sore,—before we began with the croton-oil, as the object was to open the bowels immediately, he was taken out of bed, and soused with cold water; and he was nothing the worse for it. He caught no cold; but it did not open his bowels. Sometimes it will effect that object immediately;—just as it will relieve spasmodic stricture. If all other things fail, it should be had recourse to. You will also find the smoke of tobacco exceedingly useful in this affection. It should be used as I have before mentioned. Some have even found the inflation of common air serviceable, by producing a great distention of the intestines. You will find a case of this kind recorded in the "Glasgow Medical Journal," of last year, [1831]. It is well also, on another account, to administer a clyster; for sometimes the symptoms arise from hardened fæces lodged in the rectum. I have known instances of that description; and as you do not always know whether such an occurrence has taken place, I would invariably, on that account alone, recommend a clyster. Occasionally, it is discovered,—especially in women,—that there is a mass of large hardened fæces there; and nothing will relieve the patient, but taking the handle of a spoon, and picking them out. Practitioners are sometimes obliged to condescend to this; and thus to clean out the rectum.

Supposing, however, that the disease has arisen from lead, you will find it has a great tendency to return. There is this tendency in all circumstances, but particularly in the case of lead; so that after you have once opened the bowels, it is necessary every day, for some time, to ascertain that the bowels are still regularly opened. Some German writers, and Dr. Percival, of Manchester, have praised alum very much. They state, that from two grains to a scruple has been given every six hours, with great relief. However, I should never think of depending upon such a remedy, in cases of colic. It may be very well after the attack is over, for the purpose of keeping the bowels open; but I should not think of placing any reliance on it during the fit. I know that it has been useful; for I recollect, perfectly well, having been consulted by a gentleman who, every six weeks or two months, had a violent fit of colic; so that it was necessary to put him in the hot-bath, and to exhibit a violent dose of purgatives. This always cured him, but left him in a state of great debility; and nothing that was done prevented the recurrence of the attacks. I gave him, three times a day, a scruple, or half a drachm of alum, mixed with ipecacuanha-powder; and it entirely cured him. He took it for a month or six weeks. I saw him, at intervals, for three or four years afterwards; and he had never had another attack. I dare say that ordinary purgatives, in the case of most people, will do very well; but I tried alum, in this instance, with great success. You will find it useful, where there is a tendency to disease of the intestines, to put the patient on his guard with respect to cold; and

to order him to wear flannel about the abdomen. A large roller, wound three or four times round the body, is exceedingly serviceable. This protects the abdomen against cold, and is always useful. In this, as in most other bowel-complaints, it is particularly necessary that the patient should avoid cold feet; for some individuals, if they allow their feet to become cold, always have an attack of colic. When the disease has arisen from lead, you will sometimes see the stomach remain in a state of spasm; so that there will be an aching pain there, and occasional vomiting;—notwithstanding that the bowels are regularly opened. This is a state which is best relieved by prussic acid or stramonium.

PARALYSIS FROM LEAD.

When colic has been induced by lead, you will sometimes find that, after the colic is over, the wrist will drop. The muscles situated in the forearm, and belonging to the hand, become paralyzed; so that the patient has very little use of the hand,—perhaps none; and the muscles will, at last, waste away. It is said, by some writers, that the "abductor pollicis" wastes more than the other muscles; but I am not aware that it does. Sometimes this will occur from lead, without any colic at all; but generally there is colic; and this is followed by paralysis of the wrists.

This is a state that may easily be remedied. In the first place, you should withdraw the person from the poison, and should prevent him, for a time, from following his occupation. If he be a painter, you should withdraw him from the lead, or the lead from him. It is also of great importance that he should not wear the clothes which he uses in business. A quantity of lead is still remaining upon them; and that may, of course, keep up the disease. I have no doubt that many painters might avoid the complaint, if they were more cleanly; —if they wore sleeves over their coat; and, as soon as they had done work, regularly put off their working clothes. You cannot, however, persuade men to do this. They will not give themselves the trouble, till they have once suffered for their negligence; and even then, as soon as they recover, they become careless. If painters would adopt the precautions I have given, no doubt many of them would escape.

In the way of local application, electricity is one of the best remedies. It should be applied not only to the hand, but to the forearm; because the muscles in both parts are paralyzed. I think I have seen sparks answer better than shocks; and the electricity should be applied, if possible, every day. It has also been recommended that the patient's hand should be supported by splints; and that these should be used night and day, so as to keep the hands in a state of constant extension. You will find this recommended by Dr. Pemberton. Blisters are also said to be useful. I have found stimulating applications, of all kinds, serviceable; but particularly electricity. When you apply stimulating applications to the skin, they only act on *internal* parts by sympathy. Friction may make the parts

worse; but electricity will go to every spot which is really the seat of the disease. As to internal medicines, I have never seen them do good, except it has been stramonium, or strychnine, or (which is the same thing) nux vomica. This is a species of paralysis, in which I have exhibited strychnine with decided advantage.

INTUS-SUSCEPTION.

Intus-susception,—the affection of which I spoke as sometimes giving rise to colic,—generally occurs in the *small* intestines; or else the small intestines slip down into the large,—into the colon. However, intus-susception of the *large* intestines has been seen; for the cæcum and a part of the colon have been found in the sigmoid flexure. Cases have been seen, in which the small intestines (beginning with the duodenum) have all slipped into the large intestines, and the cæcum has protruded from the anus. These are rare cases; but not impossible because they are rare.

This disease may occur from any irritation whatever; and it has sometimes, no doubt, been temporary; and has passed away. On opening animals, you will sometimes see intus-susception take place before your eyes; and then the parts will slip out again. However, when intus-susception has occurred, the parts may remain in the situation into which they have been forced; and at last cohesion takes place between the descending portion, and that into which it has slipped; and the mucous membranes may then cohere; so that complete obstruction takes place, and the person dies. Sometimes the part which has slipped in, has only adhered at the upper portion; sloughing has then taken place; and a part of the intestine has been discharged. You will be surprised at the quantity of intestine which, beyond all doubt, has been expelled in some of these cases, and yet the patient has done well. Dr. Baillie mentions having seen, or known, a yard of the colon discharged from a woman before death: she died, but a yard of the colon was first passed. He mentions another person, who lived two years after losing six inches of her colon. You may easily see how this happens, without any great mischief taking place. Adhesion takes place at the upper portion of that which has slipped down; sloughing afterwards occurs; but the part remains continuous as before,—only shorter. Whether the person has more frequent evacuations after the intestines have been shortened, I do not know; but it is an undoubted fact, that a large portion has been expelled; and yet the person has done perfectly well. You will find another case, in which twenty-three inches of the colon were discharged; and in another, twenty-eight inches of the small intestines; and yet recovery took place. Cruveilhier mentions a case, in which eighteen inches, together with the mysentery, were discharged; but the person entirely recovered, after having exhibited signs of strangulated hernia.

There is no proof of the existence of this condition during life. You cannot tell, in a case of colic, that the patient has intus-susception. I recollect being called to a case of violent colic, which ap-

peared to arise from a man drinking sour cyder, and rum, and a number of other things;—having, in a thirsty fit, drunk every thing he could reach. Violent colic suddenly took place; and his bowels, from that moment, were confined. He had castor-oil, croton-oil, olive-oil, hot baths, cold baths, and every thing that could be devised; but no evacuation was produced. He survived a fortnight; and at the post-mortem examination, intus-susception was found. Portions of the intestines were perfectly coherent together;—forming a solid mass; so that there was no continuation between the upper portion of the intestines and the lower; but the circumstance was not known before death. There was no particular tumor to be discovered. From what I have read, and occasionally seen in dead bodies, I do not think that, in a great number of cases, there can be any sign whatever. The disease has occasionally been suspected, however; and, indeed, I suspected it in the case to which I have just referred. Some persons say, that we ought to cut down upon the part;—that we are not bound to wait for the person's dying. Now the case ought to be very clear indeed, before a man's abdomen should be opened, and an attempt made to untwist his intestines directly. It has been proposed by some to cut down upon the part, wherever the seat of the pain is; but this is a very fallacious guide. You will sometimes have pain at *one* part of the abdomen; and, after death, the obstruction is found to be at *another*. But if, after symptoms of colic, a tumor be produced, the surgeon might then take into consideration whether he would cut down or not.

It may appear wonderful that so large a portion of intestine should be discharged; but the occurrence is not only mentioned by Dr. Baillie,—who, I suppose, was a man who never told an untruth in his life,—but you will find that Andral cites a case, where thirty inches of the ileum were discharged, and death did not take place for three months; and then it arose from peritonitis. He suspected that death took place in consequence of the cicatrix being lacerated by an accidental circumstance; and that, but for that occurrence, the individual would have done well. In the ninth volume of the "Edinburgh Medical and Surgical Journal," a surgeon mentions a case where the colon, the cæcum, and the meso-colon, were all discharged; but, of course, death took place.

DYSENTERY.

I now proceed to the consideration of another disease, in which there is spasm and inflammation together; and in which there is both obstruction and purging. This disease is called *dysentery* (from δυς, *with difficulty*; and εντερον, *an intestine*).

The symptoms of this complaint, are a mixture of those of colic and enteritis; so that you have violent pains of the abdomen, called *tormina*. You have also a forcing down backwards,—a forcing of the rectum, which is called *tenesmus* (from τεινω, *to bind together*); and frequently small mucous or bloody stools, together with more or less retention of the fæces; so that there is an obstruction to the course

of the fæces, but a great discharge of secretion from the inner surface of the intestines. The stools are scanty and irregular. The discharges are very frequent, but each particular discharge itself is scanty; and when the fæces do come away at all, they are found in hard lumps. Sydenham defines dysentery to be,—"frequent mucous stools, with griping." Dr. Akenside, the poet, wrote on this disease;* and he gives the same definition as Sydenham; but he adds to it—"frequent desire;"—in fact, *tenesmus.* The blood which is discharged in this affection, may be either in clots, or merely in streaks; and sometimes it is discharged in very considerable quantity, and quite liquid. Very frequently there are shreds of fibrin expelled; and Sir John Pringle says, that he has seen fatty matters discharged. That I can believe; for I could mention the same with respect to diarrhœa.

This disease may be either acute or chronic. In the *acute* affection, there is violent inflammation as well as spasm; so that there is considerable feverishness, quickness of pulse, heat, thirst, pain in the abdomen,—not only coming on in fits, like tenesmus (griping), but pain that is constant, and increased on pressure; together with dryness of the skin. This state may go off in a few days, or it may last for a month; after which time, perhaps, you may call it *chronic* dysentery. The liver very frequently ceases to secrete, so that no bile at all passes away; and sometimes it is in a state of great irritation; so that it secretes *green* bile, and the *motions* are therefore green. Sometimes, however, the motions appear to be of a pitch-like substance. Sometimes, instead of thick mucus, there is thin serum; and from there being a little hæmorrhage, this serum is rather red; so that the discharge from the alimentary canal has, very aptly, been compared to the washings of meat. The discharge may be of all colours, and of all qualities; but the fæces are usually retained. If you procure an evacuation of fæces, they come away in hard lumps; which are called *scybala*, and are like forced-meat balls, only hard. Nature gets rid of these balls from time to time. The tongue is foul; and very frequently aphthæ appear;—from the mucous membrane suffering.

This disease is very common in hot climates; and most common in this country, in hot weather. It is frequently united with the fevers of hot countries, and of our hot seasons; and frequently it is conjoined with intermittent and remittent fevers. Sometimes it precedes, and sometimes it follows these. Sir John Pringle and Sir Gilbert Blane both say, that it arises in camps at the same seasons, and under the same circumstances, as bilious fevers. It has now and then, curiously enough, been observed to be vicarious with fever. It will cease in the army and navy, in different parts of the globe, when fevers begin; and will re-appear when they cease; but, very frequently, it is united with them. It has been known to co-exist with typhus fever; and likewise to alternate with it. When typhus fever

* "De Dysenteriâ Commentarius. London, 1764."

prevailed lately in Ireland, dysentery prevailed at the same time, and occasionally alternated with it. It is very common for it to occur with disease of the liver; and occasionally it has been united with measles. The causes of hepatic disease, and the causes of fever, affect all parts of the abdomen.

The *chronic* form of the disease, is much less violent than the *acute*; and is attended with much less pyrexia. Indeed, the pyrexia, in the chronic form, may at last become hectic. The intestines become diseased; suppuration and ulceration occur; and you have hectic fever. Sometimes, in the chronic form, there is no fever at all, for it degenerates into diarrhœa; so that all the patient complains of, at last, is mucous stools and tenesmus. The fæces not being retained, it may degenerate into diarrhœa; so that you have dysenteric diarrhœa;—that is, diarrhœa characterized by great griping, and a discharge of mucus. It has been observed, in hot countries, that more stools take place at night, than during the day; and at new and full moons, than at other times. I mentioned, when speaking of remittent fever, that there is no doubt whatever that, at new and full moon, that fever prevails most, and the symptoms are more intense than at other periods. The same has been observed with regard to dysentery. More stools take place at that time;—not from the direct influence of the moon; but, from the high tides that then take place, there is more vegetable decomposition.

After death from the *acute* form of the disease, we see great inflammation of the intestines,—chiefly of the large ones, and particularly of the colon. This disease so particularly affects this part, that some have proposed to call it *colitis*,—"inflammation of the *colon*;" but that would not be quite correct; for it also affects the rectum, and likewise the small intestines. The great seat of the disease, however, is the colon and the rectum. Besides marks of redness and congestion, there is occasionally superficial abrasion of the mucous membrane; and sometimes deep-seated ulceration, and great distension. After the *chronic* form of the disease in the same situations,—namely, the colon and the rectum,—we find great redness and ulceration; but we also find that effect so peculiar to chronic inflammation,—great hypertrophy;—such thickness as acute inflammation will not induce. There is great thickness of all the coats. The rugæ are all greatly enlarged; so that the inner surface is exceedingly rugged, and you see shreds of lymph (sometimes of great length) hanging upon it. Occasionally these changes are seen only in patches; and occasionally they are seen over a very great extent; and, at the same time, red patches are frequently seen in the small intestines. The colon has been found, after this chronic form of the disease, as much as a quarter of an inch in thickness. Minute abscesses, too, are seen in the substance of the intestines. On opening the glands, you find them so very much enlarged,—so much hypertrophied, as to look like so many warts. Besides the morbid appearances just mentioned, it is not uncommon to find the *liver* in a state of disease. It is frequently in a state of chronic inflammation; and, occasionally, in a

state of abscess. The *spleen*, sometimes, is in the same predicament. The liver, however, is much more frequently affected than the spleen.

As to the *causes* of dysentery, all agree that it is very often produced by changes from heat to cold, and from cold to heat. The tendency to it is greatly increased by long-continued heat, and by fatigue; therefore in those countries where it is continually seen, it frequently breaks out when the army has suffered to a great degree, or there has been a sudden vicissitude of temperature. A cold wet night, after an intensely hot day, will occasionally produce this affection, in a vast number of persons. It is a disease particularly common on board ships, and in camps. Some consider that one cause of it is malaria; and certainly it is a fact that, where malaria prevails to a great extent, dysentery is very common; but as these are wet situations, one hardly knows whether it is the malaria itself which gives rise to it. You will recollect I mentioned that, with the remittent fevers of hot countries, there are bilious fevers of all kinds. It is also undoubtedly produced, sometimes, by bad food; and likewise by bad water. This disease, for example, prevailed in the Penitentiary at Milbank; where there is a combination of unfavourable circumstances. The prison itself is situated in the most unwholesome place imaginable;—as if it were intended to carry off quickly the people who have been placed there; and I believe the allowance of food was not such as medical men considered to be proper. It co-existed there with scurvy, and various other diseases. Formerly dysentery was very common in London; but at present we seldom see it. I scarcely ever meet with a case, except in those who have been in hot climates; whereas, formerly, it was one of the greatest scourges in the metropolis. You find it treated of by Sydenham, as one of the diseases that came daily under his observation. It was one of the great causes of mortality in the city;—just as was the case with ague, plague, and scurvy. I presume it arose, then, from the bad quality of the food upon which people lived, and the bad drainage of the city. As to the ill effect of bad water, it is said that when the disease prevails in ships, those suffer most who are nearest the pump.

It has been supposed that fruit produces the disease; but unless the fruit be bad, there is no reason to suppose that this is the case. Of course bad fruit, coming under the head of bad *food*, might produce it; but the mere circumstance of eating fruit at the time when nature provides it for us, does not give rise to the disease. On the contrary, there are on record many cases of fruit having proved exceedingly beneficial. You will find it mentioned by Zimmerman, in his work on Experience, that in 1751, a whole regiment, in the south of France, was nearly destroyed by dysentery. The officers purchased the entire crop of several acres of vineyard for the regiment; and not one man died from that time, nor was one more attacked. The work is well worth reading; for it is as amusing as a novel, and full of instruction. Tissot, a French writer, also mentions that eleven

persons in one house were attacked with dysentery. Nine of them eat fruit and recovered; but the grandmother, and one darling little grandchild, had wine and spices instead,—as being more comfortable; and both died. It was observed in Holland, that the worst flux which was ever known in the army, occurred at the end of July, when there is no fruit there but strawberries, of which the men never partook; and that the disease ceased entirely when October arrived, and brought the grapes, of which the men eat very heartily.

Any cause of intestinal irritation may produce dysentery; more particularly when a predisposition has been given by long-continued heat, and by bad food; under which term, of course, *drink* is included. It is said that, at the old barracks at Cork, the troops had water contaminated by the common sewers, and made brackish by the tide; and dysentery prevailed. This was remedied; and the disease almost entirely ceased. Linneus's friend, Rolander, had dysentery from drinking standing water out of a cistern of juniper wood. He ascribed the disease to animalculæ; but the mere circumstance of its being stagnated water, was sufficient to account for the disease, without calling in the aid of animalculæ.

It was formerly supposed that this disease was decidedly contagious, and that it spread most from the stools; so that if any individual followed another labouring under dysentery, for the purposes of relieving nature, it was conceived that he was more liable to catch it, than by simply being with him. Whether it is contagious or not, it is impossible for me to say; but the sporadic cases of chronic dysentery, which we occasionally meet with in those who have come from hot climates, certainly are not contagious. I never saw any thing that could lead to the supposition of the disease being so. I will not presume to deny that sometimes it may be contagious abroad; but many diseases are supposed to be contagious that are not. I think it may reasonably be doubted, whether it is contagious. Some imagine that almost any particular disease, in particular circumstances, may become contagious; and therefore I do not say that it *never* is contagious; but as the disease is seen in England, it certainly is not.

I mentioned that this was a disease which prevailed particularly in camps, and in the fleets abroad. In the Peninsular war, our army lost no fewer than four thousand seven hundred and seventeen men by this disease exclusively. In 1812, two thousand three hundred and forty died; in 1813, one thousand six hundred and twenty-nine; and in 1814, seven hundred and forty-eight. The disease is very manageable, if taken in the first instance; but extreme mortality arises from the unfavourable circumstances in which men are placed. From the want of all comfort, and the excessive fatigue, medical men have little chance of doing good.

With regard to the *nature* of the disease, it appears to be inflammation of the mucous membrane, together with spasm of the muscular fibres, *chiefly* affecting the large intestines. One ought not to say "*altogether* affecting the large intestines;" but it affects them

much more frequently than it does the *small* intestines. The inflammation gives rise to constant pain, to sickness, to pyrexia, and to a great dicharge of mucus and blood. The spasm gives rise to occasional severe pain; and to the retention of the fæces. As to the *prognosis* of the disease, that must depend upon the violence of the symptoms; but you will always find it mentioned by authors, that one of the worst symptoms that can occur, is the discharge of worms;—as though the worms instinctively knew that the habitation was about to be dissolved; and that therefore the sooner they quitted it the better;—just as rats are said to quit an old barn, and to look out for a new habitation, before they are turned loose by the destruction of the present.

With regard to the *cure* of the affection, the first thing is, to remove, if possible, the cause of the disease. If there be a bad quality of the ingesta (whether liquid or solid), or any dampness in the situation, or any contamination of the atmosphere, all this should be obviated;—either by removing the patient from it, or by removing it from the patient; otherwise you are fighting against a double enemy;—both the disease and its cause. In *acute* dysentery, we have to treat the affection upon a decidedly antiphlogistic plan. It may be necessary to bleed vigorously in the arm; to apply leeches freely and repeatedly to the abdomen; to give mercury, and get the mouth sore; to apply cataplasms of hot moist bran to the abdomen; or, if it be preferable, to apply them cold; but, in general, the moisture answers much better if it be warm. You must treat it as a violent active inflammation of the intestines. With regard to calomel, you will find that, although all agree upon its importance in this disease, yet that some recommend *large* doses at intervals, and others *small* ones. Those who recommend the latter, would give other purgatives, such as castor-oil, at intervals, for the purpose of emptying the intestines; whereas, those that give large doses, trust more to the calomel itself. It is highly necessary, in this disease, to open the bowels well. Notwithstanding the number of evacuations, the fæces are altogether or greatly retained; and therefore it is necessary, not merely to employ the remedies for inflammation, but to empty the intestines thoroughly. Some people would give a scruple of calomel at intervals;—so as to get the mouth sore as quickly as possible, and at the same time to empty the alimentary canal. Those who give small doses, would give other purgatives in great abundance; but it is necessary to get the bowels open, as speedily and as effectually as possible. It is useful to employ opium at the same time;—on account of the great tendency which there is to severe spasmodic pain. The opium may be united with the calomel; and if you take care to make the calomel operate by means of other purgatives, no harm can arise from it. If castor-oil will stay on the stomach, I should prefer that medicine to salts; because there is, perhaps, a great discharge of mucus; and perhaps there are watery stools rather than fæces; and castor-oil has the property of thoroughly emptying the alimentary canal. Emollient clysters are also

of the very highest importance; but nothing acrid should be put into them. Clysters of gruel, containing a certain portion of laudanum and castor oil, will be much better than clysters containing salts. The patient should be kept without food;—his stomach should be allowed as much repose as possible;—he should be kept exceedingly low.

Many persons, formerly at least, had a very high opinion of ipecacuanha in this disease. Dr. Akenside, the poet, in his elegant Latin treatise on this disease, recommends about three or five grains of ipecacuanha every six hours; and many persons still give it, and also antimony, so as to create sickness. I myself have no experience of any such plan. I do not see the utility of causing the patient to vomit in this disease; neither have I ever myself been able to discover the soothing effects of ipecacuanha. Some persons, when they give purgatives, give ipecacuanha; and say that it has the property of emptying the alimentary canal; but after repeated trials, I cannot say that I have found that it has any peculiar properties, except that it makes the patient sick. I have been as successful in this disease as in any other, by treating it on antiphlogistic principles;—without exhibiting any thing with the view of producing sickness, or any specific operation. Formerly, various preparations of antimony were given; but I have really not found them at all necessary.

With regard to the *chronic* form of the disease, you are to consider whether there is any inflammation still existing. There very frequently is. The abdomen is still tender; and it would be absurd to think of giving astringents, and blocking up the intestines, while that inflammation exists. You will find that the readiest way of lessening the disease is, in the first instance, to apply leeches freely over the abdomen, and to throw up a clyster;—taking care that the bowels shall be opened freely and regularly; and when you have done all this, then astringents will be very proper.

In chronic dysentery there frequently is no inflammation at all. The time arrives when there is a mere gleet of the surface, or the surface is merely in a state of irritation; and in that condition, opium and astringents of all kinds are exceedingly serviceable. But you may do infinite mischief unless you ascertain, before you give astringents, that there is no inflammation. If there be inflammation, you must treat it accordingly;—by leeches, blisters, fomentations, and things of that description; and you must take care to see that the bowels are regularly opened, and the fæces discharged; because if the fæces are not discharged, and you exhibit astringents, you will produce inflammation, though there was none at first. But in the chronic form of the disease, the fæces, at last, are discharged pretty well; and no purgatives are required. Still, however, the character of the acute disease so far remains, that there are bloody and mucous stools, a desire to go to stool, and tenesmus. In this form of the disease, astringents may be given safely, and may be either vegetable or mineral; and it is best to combine them with opium. By far the best astringents that I know, are kino and catechu. It may be right

not to give the tinctures, as they may excite the pulse, and irritate the patient. It is best to give the infusions. Opium is very much required in this disease, to prevent griping. As I before said, opium is often very safe and very useful in the *acute* form of the disease;—provided you take care to subdue inflammation, and to keep the bowels open; but in the *chronic* form, it may be given with very great safety;—provided the bowels be regularly open,—as is usually the case. A good mode of exhibiting the opium, is to give the Pulvis Catechu Compositus. It will not irritate so much as opium alone will do.

You will find that when the ordinary astringents (catechu and kino) fail, mineral astringents will frequently cure the disease; and that which I have been most in the habit of employing, and with very great success, is the sulphate of copper. The way in which I became acquainted with its use, was from hearing a gentleman state that, at the Medical Society, at Guy's Hospital, a case had been read of violent chronic diarrhœa; which yielded to nothing but copper. Dr. Sutton, of Greenwich, at a consultation the other day, informed me that he had a very obstinate case; and that all the other astringents having failed, it occurred to him to try this; and he did so with very great success. I have consequently used it; and it certainly is one of the best, where mineral astringents are required; but it is necessary to remember that you should not give it on an empty stomach; because, if it come in contact with the organ, it will excite vomiting. It should not be given till after breakfast; and that is the case with most acrid substances. It stands to reason that, if they be not given till the patient has had a meal, they will produce less irritation of the stomach, than if they come in direct contact with it;—which they must do when the stomach is empty. It is right to give this medicine in the form of a pill; because all acrid substances act more powerfully in a state of solution. If it be given in a pill, it comes in contact with a smaller surface; and will therefore produce less irritation than if it were diffused. It is generally right, also, to give it with opium; because, although it is an astringent, yet it is an acrid substance. It has two properties;—the one astringent, the other acrimonious; and therefore it is best united with opium; but I have frequently omitted the latter, and continued the former, with perfect safety. The smallest dose which it is worth while to exhibit, is a quarter of a grain; and you may gradually increase this to three grains. You may consider this the largest dose that patients will ordinarily bear. In fact, many will not bear more than a grain and a half. It produces no constitutional effect. I have known a patient take it for three years, for a peculiar kind of diarrhœa, without any such result. I never saw such a constitutional effect arise from it, as occurs from lead or arsenic, or any other mineral substance. If it produce sickness, you will find it of great use to give hydrocyanic acid with it. If you give from one to four drops of the acid, according to the necessity of the case, when the copper is taken, you will find that patients will bear it without

sickness and without nausea; though without it, perhaps, there would be both. By a steady perseverance with this medicine, or with vegetable astringents and opium,—taking care, at the same time, to have the abdomen well covered with flannel; making the patient avoid cold, and every kind of ingesta likely to irritate the alimentary canal; and, at the same time, supporting his strength,—you will effect a cure in the greater number of cases. It is a rare thing for me to lose a case of dysentery. I do not know how long it is since I lost one; but certainly it is not a very common complaint.

In the chronic form, if the intestines be ulcerated, you may still cure the disease; for it is only when there is a very great degree of ulceration, that patients die from it. Ulceration of the intestines will heal,—just like ulceration of any other part; but of course you will meet with cases, where medicine can do no good;—where the intestines are in a state of hypertrophy,—look as if they were worm-eaten;—where the mesenteric glands are diseased; and frequently perforation takes place, and the patient is destroyed by peritonitis. A representation of such a case as this, is presented in Dr. Baillie's plates; and nothing can be expected to do any good in it. A surgeon would not be expected to cure a leg or an arm, in such a state as that. If the patient may sink from the disease of a part so unessential to life as an extremity, much more may he do so in the case of the intestines. Some persons recommend other substances in this affection;—such as nitric acid and muriatic acid, united with opium and astringents. You would expect, *à priori*, that such medicines would only cause irritation; but there is testimony in favour of muriatic acid combined with opium; and some say the same of nitrous acid. I have never given acids in the disease. I have known them, when taken in other diseases, produce a pinching in the bowels; and therefore I have never ventured to give them to a patient labouring under this affection.

You will find it very necessary to alleviate one symptom; and that is the tenesmus. If there be any tenderness about the abdomen at large, leeches should be applied to the anus, as well as to the front of the abdomen; because tenesmus may arise from an inflammatory state. When, however, it does not arise from an inflammatory state, but rather from irritation than anything else, opium is very useful. It is best to give it in the form of tincture, in a very small quantity of fluid. About four ounces of fluid is the utmost that can be given; because you wish it to be retained, and not to be rejected. Bulk will irritate as well as acrimony; and, therefore, when you are giving it to lessen the pain and tenesmus, as small a quantity as possible should be employed. About forty or fifty drops of laudanum, given in a little starch, will be one of the best injections of the kind. Sir James M'Gregor says that, in the Peninsula, he found great relief from injections of acetate of lead; so that we might put laudanum into a solution of the acetate of lead. I presume one or two grains of the latter would be enough. We know that lead has a soothing

effect on a raw surface, or on a mucous surface in general; and therefore we can conceive that this would be a proper medicine.

As to mercury, I have never given it in the chronic form of the disease. I have always been able to cure the affection, as we see it in this country, without it; and Sir James M'Gregor says that, in the Peninsula, it was worse than useless;—it was absolutely injurious, unless the liver was diseased at the same time. I have repeatedly watched the motions in this disease. In scores and scores of cases, they were quite white; and white for a month or two;—more like paste than anything else; and, without giving any mercury, I have suddenly seen bile in them. The intestines are restored to their function; the health is improved; the liver begins to do its duty properly; and, without exhibiting mercury, you will see the bile return,—sometimes gradually, and sometimes suddenly. When you consider that mercury renders the body more susceptible of cold, and that your object is to soothe the patient, I would not recommend it to be given in the chronic form of the disease. I believe I mentioned the necessity, in the chronic form of the disease, of well bandaging the patient's abdomen; and some persons, instead of employing flannel, prefer straps of adhesive plaster all over the loins. This might be applied first, and bandages over it.

DIARRHŒA.

I now proceed to the consideration of that disease into which chronic dysentery degenerates; but which happens every day (indeed I may say every hour) without dysentery;—namely, *diarrhœa*. By "diarrhœa" (from διαρρεω, *to flow through*), is meant frequent liquid, and rather copious, feculent stools;—not dependent upon debility of the sphincter ani. In dysentery the stools are not feculent. When a person is weak in the sphincter ani, he may have stools every ten minutes; but he would not, on that account, labour under diarrhœa. In this disease there is only pain at the time of the evacuation. It is pinching enough, and pretty sharp then; but it ceases as soon as the evacuation is effected; whereas, in dysentery, the griping is horrid; and is not lessened by the discharge of mucus and blood which characterizes the disease. Cullen, in his definition, says there is no preliminary fever; and that the disease is not contagious;* but there may be preliminary fever in diarrhœa, inasmuch as it is frequently inflammatory. I should be content with the definition I have given.

The discharge, in this disease, is of all colours;—white, green, black, yellow, and clay-coloured; and of various colours at various times. It is also of all kinds of disagreeable odours;—sour, fetid, and every other variety of unpleasant smell. It may likewise be bloody, watery, mucous, or purulent. Occasionally, the motions can hardly be called *liquid*;—they are only very *soft*. Sometimes

* "Dejectio frequens; morbus non contagiosus; pyrexia nulla primaria."

they are uniform in their tenacity or softness; and sometimes they differ in different portions. It appears that the discharge is chiefly an increased secretion of the intestines, and sometimes of the liver. Sometimes the nature of the discharge is dependent upon some other organ. The discharge may be purulent from an abscess in the liver, or perhaps an abscess in the ovaria. There are all degrees of the disease, and all durations of it.

After death you will sometimes find nothing;—it has been merely an excessive secretion; and, on the other hand, you will frequently find all degrees of redness and congestion. Frequently the mucous membrane is found softened; and then it may be either red or white. Sometimes it is *inflammatory* softening, and then it is *red*; and sometimes it is without any mark of inflammation, and is quite *white*. Occasionally the mucous membrane is found very much thickened; and it is also ulcerated. Sometimes the ulceration is a mere superficial abrasion; and sometimes it is very deep;—appearing to have begun in the mucous follicles. The mucous follicles may contain (as in chronic dysentery) curdy stuff, and sometimes pus. The follicles are frequently in a state of hypertrophy; and sometimes, without being ulcerated, they contain pus. In fact, you have all the various states of the intestines which I mentioned, as being seen after fever, and in chronic dysentery. These may occur in the large intestines, or in the small intestines, or in both;—sometimes very extensively, and sometimes partially.

The *causes* of the disease are, in the first place, too much food. If a person eats a great deal, it must find its way out; and it does. There must be more *exportation* in proportion to the *importation*; so that diarrhœa is very frequently an effort of nature; and the person would be badly off if he had not diarrhœa. An alderman, I should think, would suffer severely, if he had not many attacks of diarrhœa, in the course of a season. Improper articles of food will give rise to diarrhœa. Every body knows, that if he take something which disagrees with him, he will suffer from it;—nature makes a proper effort to get rid of it. Frequently *new* articles will occasion diarrhœa. If a person eat something to which he is not accustomed, although it may be excellent in its kind, it will frequently give rise to the disease. Children suffer exceedingly, if they are weaned too early, or too suddenly. There is a particular kind of diarrhœa in infants, called *weaning-thrush*. If children be weaned before nature is ready for the change, or if that change be made too rapidly, diarrhœa takes place. Children cannot bear the sudden change from milk to common food; whereas, if they be strong, and be weaned gradually, they bear the alteration of diet very well. This is precisely analogous to what is observed with regard to fish. There are *salt*-water and *fresh*-water molluscæ; and if you put the *salt*-water molluscæ into *fresh* water, and *vice versâ*, they will die; but if you mix the water gradually, so as to lessen the saline quality of the water by degrees, they will live in it as well as if they had been always accustomed to it; and the same with regard to the *fresh*-

water molluscæ living in *salt* water. A new article of food is a common cause of diarrhœa, both in children and adults; but especially in the former.

Cold, especially after heat, is another common cause of this complaint. The mind, too, has a very great effect. Fear is generally considered to operate very strongly on the intestines. Malaria is enumerated among the causes of this disease. The suppression of other discharges will sometimes produce it. If a person have been accustomed to a running of the leg, and it is suddenly stopped, he may think himself well off if he have diarrhœa; because, if he had not, he might have apoplexy. Metastases are causes of it. If another disease cease, it is common to see diarrhœa begin. If inflammation suddenly cease, diarrhœa may occur. Dysentery is mentioned as one cause of it. This is an affection which is very commonly produced by other diseases; or it becomes a part or consequence of other diseases. In fever, for instance, diarrhœa is very common;—it becomes a part of the fever. It is very common after measles. Measles affect the intestines almost as much, I was going to say, as the skin; but, at any rate, they affect them in a very remarkable degree. So, again, in phthisis;—the same state of the body that gives rise to that affection at last, causes a great irritation of the alimentary canal.

Besides the exciting causes of the disease itself, there are exciting causes of *paroxysms*,—if I may so call them. For instance, when a person is labouring under diarrhœa, if he move about much, he will very likely be obliged to go to stool; and again, on taking food, many persons immediately have a desire for a motion. Sometimes it is *warm* food, and sometimes it is *cold*, which has this effect. Frequently persons can take nothing warm, without having a desire to go to stool; and the application of cold to the surface, will bring on the desire in a moment. The best plan is to sit quietly by the fire without moving.

As to the *treatment* of this disease, if it be slight, it is best to do nothing at all. It is generally a mere effort of nature, to relieve herself from something improper, which has been taken inwardly; or from the depressive action of an agent applied to some other part of the body. When cold has been applied to the surface, nature relieves herself in this way; and if the individual do not make it worse, he is sure to get better. But if it be necessary to adopt any measures, mild diluents, in the first instance, are the best things. Every old woman knows that barley-water, chicken-broth, and so on, help to soothe the intestines. To these some persons add mild purgatives; and some are in the habit of giving the patient a dose of physic, whenever he has diarrhœa; and, in general, there is no harm in it. If anything acrid have been taken, it may aid nature, and the disease may cease so much the sooner; but if there be merely an excessive action going on,—from a depressed circulation of the surface, or the passions of the mind,—one cannot see what good can be done by a purgative. As the disease, however, in most instances,

if left to itself, would cease without any remedy at all, a purgative has frequently the credit of curing it, when it deserves no credit at all.

If, however, the disease run on, it may be necessary to stop it; and, for this purpose, various opiates and astringents are given. It would be well, in these cases, to avoid giving tinctures; because there is frequently an inflammatory state; and an astringent is just as good *without* the alcohol, as *with* it. I need not enumerate chalk-mixture, catechu, kino, and all the various modes in which opium is given. In very severe cases, the same treatment should be adopted as in chronic dysentery;—the exhibition of sulphate of copper, and other astringents. For what I know to the contrary, you might give these astringents with safety at the beginning. I have done so; but it is too powerful an astringent to be frequently required. The sulphuric, nitric, and muriatic acids, united with opium, have been given in these cases, as well as in dysentery. Dr. Moses Griffiths, who invented a mixture of iron called "Mistura Ferri Composita," recommended in diarrhœa a mixture, consisting of two drachms and a half of tincture of rhubarb, and six drachms of linseed-oil;—a portion of which was to be given two or three times a-day. I have known this administered with good effect. The rhubarb, besides being a moderate purgative, is an astringent; and the oil is a demulcent. The one soothes, the other astringes; and it is thus that it has a good effect in chronic diarrhœa. It is also given in chronic dysentery. You will find it in some of the Hospital-Pharmacopœias. It is a very disagreeable remedy;—as vile as can be well conceived; and I myself never found it necessary to give it; but it is sometimes a good medicine in this disease.

It is always necessary to ascertain carefully, whether the disease is not inflammatory. After measles, it generally is to a certain degree; and you should always press the abdomen, and see whether there is tenderness; because you may in vain give diluents, opiates, and astringents; and may even make the patient worse by them than if you did not give them at all, if there be a degree of inflammation which you do not take means to remedy. I have seen many cases of diarrhœa, which have resisted all the means that could be adopted; but which ceased presently on applying leeches to the part, or on the application of a blister. In fact, this disease is frequently nothing but an inflammation of the mucous membrane; and it will cease if you apply blisters. It is frequently necessary, while you are doing this, to give opium and astringents; and you may do so with perfect safety, if you attend to the inflammation. Indeed, if you attend to the latter, there is frequently no occasion to give the former at all; and if you do *not* attend to it, you make the patient worse by their exhibition. The first thing to be done, therefore, in cases of this disease, is to inquire into the cause. If the patient have been eating improper articles of food, you must change his diet; if there be any inflammation, you must treat it accordingly; if there be no inflammation, or not much, then you must exhibit opiates and astrin-

gents; and in this way you will cure the disease. The mildest of all astringents, is chalk-mixture and a little laudanum; but if that will not answer the purpose, you must go on to catechu, kino, and sulphate of copper;—taking care that the patient be well purged in this disease,—just as I mentioned in chronic dysentery.

This is the common form of diarrhœa. Occasionally, however, we meet with some singularities in this disease. You will recollect I mentioned that Dr. Baillie described a particular kind of jaundice,—remarkable for its being green, and for its ending unfavourably. He has also described a kind of diarrhœa, remarkable for the fæces being white, and likewise terminating for the most part fatally. You will find it described by him in the "Transactions of the College of Physicians." He says that, in this particular kind of diarrhœa, the stools are white,—like a mixture of lime and water;—that is to say, like thin mortar, or mortar spoiled. They are also frothy, of a sour smell, very copious, very numerous, and unattended with pain. The disease is so chronic, that it may last for years. It most commonly occurs, he says, in men,—not in women; and more particularly in men who have been in warm climates, and suffered from disease of the liver. He says that the affection may occasionally be suspended, and that the fæces will sometimes become brown; but the disease returns; and the motions become white again, and also fluid. The affection is very rarely removed. The patient wastes away under it, and dies.

Now this is a disease which I have occasionally seen; and though Dr. Baillie could not cure it, I have been successful by treating it in the same way as ordinary diarrhœa. I have been successful in two cases which I have had of it, by persevering steadily in the exhibition of sulphate of copper combined with opium. Without giving mercury, the motions of these persons became bilious;—they ceased to be white; and at last they became firm, as well as of a proper colour. One man was a patient in the hospital. He got stout, regained his looks, and would not stay any longer. His disease might return a year or two afterwards; but I kept him there a considerable time, and he remained perfectly well. He had been in hot climates; and, in all respects, corresponded with Dr. Baillie's observations. The other case occurred in a gentleman who had long been in India; and after persevering with medicine for nearly two years, the disease, I understand, has entirely ceased. He is an old man, and his constitution has given way to the warmth of the climate. He has had attacks first of one thing, and then of another; but his diarrhœa is perfectly cured. Dr. Baillie mentions that he has tried the ordinary remedies of kino, catechu, and chalk-mixture; but that they have all been unsatisfactory, and have all failed; but by persevering with sulphate of copper and opium, and giving tonics at the same time, my two cases did well. Sulphate of copper alone might have done.

You will occasionally see, in diarrhœa, very considerable shreds of lymph discharged. Patients tell you, that they have discharged great pieces of skin;—that they are sure the coats of their bowels

are coming off; and medical men have thought the same thing. Dr. Baillie once believed, that he saw a portion of mucous membrane come away. But he afterwards detected his error; and said that it was nothing more than an effusion of lymph, corresponding with the effusions sometimes found on a serous membrane; and exactly like those tubercular substances, which sometimes come away from the air-passages. Occasionally a large quantity of fibrin is secreted on the inner surface of the mucous membrane, in chronic dysentery; and it will come away in the form of large shreds, or even tubes. I have always seen this form of the disease marked by great pain; and have found it exceedingly obstinate. I have not seen more than three or four cases; but by the most persevering treatment, I have not done any good. I have merely afforded temporary relief.

DISCHARGE OF FATTY MATTERS.

There is another discharge from the alimentary canal, more curious than that last described, and that is a discharge of fat,—both in a liquid and a solid state. Sometimes it is discharged with diarrhœa; and sometimes without it. Occasionally the lumps come away with great pain. In other cases, it is oil that comes away,—just of the colour of melted butter. My attention has been attracted to it, from having had some cases of this description under my own care. My curiosity was excited; and I was led to read upon the subject. I find that Sauvages, whom I mentioned as having been the first framer of a system of Nosology, has mentioned a *diarrhœa adiposa*; and he says that he has known the bowels, after hard riding, pour forth adipose matter. He says that, apparently, this adipose matter had been absorbed by the blood vessels; where, being mixed with the blood, it rendered the latter viscid. It then partly flowed into the intestinal canal; and there, as it were, covered the fæces with butter. That is his description of it. I found, however, several very satisfactory cases of this disease. There is one of a woman who discharged every day, for fourteen months, a large quantity of yellow fat; which lay on the fæces, like melted butter. Sufficient was collected to fill a number of vessels; and when thrown into the fire, it burned with a bright flame. After the fæces had cooled, it concreted; and became of the consistence of absolute fat. But (what was singular) there was neither tenesmus, emaciation, nor colliquative fever; and sixteen years afterwards she was in excellent health. This case is related by Tulpius; but he says, "What is this to an old woman who, in her seventieth year, voided precisely similar fat from the intestines and bladder?" These are singular cases; but I believe them. Tulpius adds that, towards the close of the disease in the last case, the patient became feverish, and in consequence emaciated; and that death found her little else than a parched and juiceless corpse. I find another case, where a patient, for some years, had suffered pain in the stomach. Nothing relieved her, and she became worse; when she one day discharged about three pounds of fat; and

from that moment speedily recovered. I find another case, where a patient discharged from his bowels, for two years, a large quantity of fatty substance. He grew thin and weak, and then died. In the "Edinburgh Medical Essays," you will find a case described which occurred to a weaver, forty years of age; who, in attempting to take up a very heavy vessel, felt his back-bone crack; which crack was attended with violent pain. Being unable to stand, he fell to the ground. The pain long continued very severe. He fancied that the bone was dislocated inwards; and, in order to reduce it, made one of his neighbours pull his belly backwards; while another, getting on his shoulders, pressed them downwards and forwards; by which he thought his loins were made much straighter than formerly; and he had less pain. Some days after this, a country bone-setter undertook to put all the bones right;—making one man pull at his shoulders, and the other at his legs, in a contrary direction. By this extension, he was put to most exquisite torture; and all his complaints were increased. Three months afterwards, he could just manage to crawl out of doors; and then observed among his excrements a whitish substance, about the bulk of a large walnut. It was like tallow, or hardened marrow;—being composed of small globules. It melted on the application of heat. During several days after this, he observed several pieces of the same sort of substance (of the size of kidney-beans or peas) come away among his fæces. He thought all those lesser pieces, if they had been put together, would have been equal to the large piece he passed first.

I had, in St. Thomas's Hospital, a patient with diabetes, who had wasted away. For some reason or other, I happened to see his motions; and there was lying upon the fæces a large quantity of fatty matter,—soft fat; which, he said, was quite fluid when discharged. I looked at the fæces regularly every day; and there was always one or two table-spoonsful of this fatty matter. I took a part of it to Dr. Prout, and some to Mr. Faraday. It was also seen by some others of the first chemists in London; and they found it to be similar to fat. The question asked was,—"whether the patient had taken castor-oil?" But he had taken nothing of the kind,—nothing oleaginous. The fat ran away, in this liquid form, with his motions. or after them; and when he had diarrhœa, it came at the top. It was voided like oil; but presently concreted. His wife told me, that this was the first symptom of his complaint. He had formerly discharged an immense quantity of it; so that full one-half his motions were fat. What was curious,—the disease ceased while he was under my care. He died of diabetes and phthisis. I opened him; but there was nothing particular to be found. The diabetes had arisen from organic disease of the kidneys; but there was nothing else to be found there. The intestines looked greasy enough;—they were like paper steeped in oil; but that was all. No oil was found in the alimentary canal. Dr. Prout tells me that, in cases of this kind which have come to his knowledge, there was considerable disease of the kidney. Mr. Pearson, of Clapham, shewed me a quantity of fat

which came from an old woman; and said he could furnish me with any quantity. He understood from her, that it was discharged with the urine; but he mentioned the case of a lady, whom he knew very well, who discharged fat both with the urine and with the fæces. He did not attend upon her; but he had been in company with her. He had been particular to have the urine by itself; and also to ascertain whether the fat came from the bowels or not; and he clearly ascertained that it came from both. In this case of his, and in my case too, I think the motions were very white. They seemed to be of a viscid nature. It is a curious disease. Mr. Howship mentions a case, in his book on Morbid Anatomy, of a lady who discharged a great quantity of this fatty matter; and she was cured by giving her a pint of olive-oil. That was an odd remedy. He says she took a pint of olive-oil; and was well from that day, though she had been long ill previously. As "facts are stubborn things," I gave the man under my care four ounces of olive-oil; and the voiding of fat greatly diminished from that time, and soon ceased. Whether the circumstance was accidental or not, I cannot tell. You will find a case mentioned in "Hufeland's Journal," for 1826, of a quantity of thick oily matter being vomited. There was extreme emaciation; together with a rapid discharge of thick oily matter from the stomach.

I suppose you are aware, that the spermaceti-whale is liable to this disease;—that what is called *ambergris*, is fat collected in the intestines of spermaceti-whales. As much as one hundred and eighty-two pounds have been found in, or discharged from, the intestines of that animal; and it is said that it has never been found higher than six or seven feet above the anus. This fat is very often discharged, and found upon the shore; but occasionally it accumulates, and the animal dies;—either from the accumulation, or from disease forming in the intestine;—I do not know which.

GASTRO-INTESTINAL CONCRETIONS.

This leads me to speak of concretions of the alimentary canal; which concretions are sometimes discharged, and sometimes collected within; and as they are sometimes found in the stomach, as well as in the intestines, we may speak of them together; under the head of "gastro-intestinal concretions."

In the first place, these concretions may occur without any fault in the gastro-intestinal canal;—they may arise from the gall-passages. Of course if a gall-stone escapes from the ducts, but is not voided, it will be found in the stomach or intestines. Dr. Marcet says, that he once found in the alimentary canal, a stone, which came from the *urinary* passages. Ulceration had taken place; and a communication had been formed between the urinary and the fæcal passages. The rectum, in this case, was imperforate.

Occasionally very hard concretions are found. They are often nothing more than hardened fæces; and then they are called *scybalæ*; but occasionally they consist of articles which have been swallowed. I saw a man who had swallowed nineteen clasped knives. He was

not believed for some time, but he assured me that he had swallowed them; and, to convince me, he took out of his pocket one of the same size, as those he had already swallowed, and put it down his throat. I was frightened, and begged he would bring it up; but it was too far gone. Some persons believed him, and others did not; but at last we could feel them sticking in the abdomen; and ultimately they could be felt, I understand, in the rectum. He discharged fæces containing a large quantity of iron,—blackened; and at last he died in the most horrid torments;—the knives cutting his intestines to pieces. The fastenings of the knives, as solution went on, became less and less secure; the handles seperated; and the blades were let lose. After death, a great quantity of knives were found in his abdomen;—some having run through two or three-folds of the intestines. It was a frightful sight. Considerable portions of the knives were discharged during life; and those, together with what were found after death, are preserved at Guy's Hospital. The case is described by Dr. Marcet, in the first volume of the "Medico-Chirurgical Transactions."

When a person has taken a great quantity of chalk-mixture, and even magnesia, concretions have sometimes been formed. There is a preparation in the Museum at St. Thomas's Hospital, where the intestines of a child are completely blocked up with magnesia. It has the appearance of hard mortar regularly cemented; and is said to be magnesia. It is necessary, therefore, to be on your guard (when you are exhibiting chalk, or magnesia) not to give it too long without ordering a purgative,—so as to carry it away. There is a case on record of a person who had taken magnesia for a long time, and suffered a great deal; and who then suddenly discharged from the intestines, a large quantity of powder of magnesia. It is a fact that, from magnesia or chalk, the intestines sometimes become completely blocked up. The carbonate of iron will have the same effect. When you are giving that medicine in any quantity, it is necessary to see that the bowels are regularly opened. You may give an immense quantity, if you attend to that point. I related a case where a man took nearly two pounds of it, every day, for some days, when labouring under tetanus (of which he got well, by-the-by); and he regularly discharged large lumps of carbonate of iron. They came away as they would from a horse, covered with mucus, and giving him no pain whatever; but then he had a clyster to prevent any mischief. If a person do not attend to his bowels, a great accumulation may take place in the rectum, and the individual may be obliged to pick it out; but this must be from bad management. I have known cases of this sort occur, two or three times. I had another patient labouring under tetanus, to whom I gave this remedy, and he also got well; but if the nurses did not give him purgatives properly, he suffered pain in the rectum;—the rectum was distended, and became dry; and he was obliged to pick the iron out. In his bed was found a shovelful; which he had amused himself, day and night, in removing. I recollect an obstinate hyste-

rical girl, and also the case of a lady, in whom a similar accumulation took place; but in these cases, it arose from the patients' refusing to let us know the state of their bowels. It is right to know that, if you do not pay proper attention, such things may occur. Dr. Barlow (of Bath) mentions a case, where pills of sulphate of iron were discharged, a year after they had been taken. This is another general fact, shewing that articles may remain in the alimentary canal, for a long period, before they are voided. Substances which are liable to concrete should not be given, unless you attend to the bowels. Dr. Prout told me that he was sent for, a year ago, to see a lady from whom some odd things had come away. She had suffered excruciating pain; and it turned out to be from larks' bones. This lady had been in the habit of eating larks, of which some ladies are fond; and she munched the bones. She was a lady of title; but in consequence of this lark-eating, she suffered great pain. The substances discharged were sent to a celebrated chemist, at Tooting, in order that he might ascertain what they were. He first discovered them to be bones; and afterwards, from their figure, they were ascertained to be the bones of larks.

It was the fashion, a few years ago, (and I believe it has not yet quite gone out), for people to stuff themselves with whole mustard-seeds. They were thought to keep the bowels very open. Some said it was a good practice; and others distributed pamphlets and tracts, recommending it. Last year a gentleman came to me with various odd affections of the alimentary canal, which I could not well understand. Two days afterwards, he brought me a quantity of seeds that had come away; and I could not imagine what they were, till at last he told me he had been eating mustard-seeds, but had not eaten any for six weeks. He had given up the practice before he came to me; but they had accumulated in him, and actually remained for six weeks; and his danger arose from that. We know that they generally come away whole. One gentleman told me that he sowed some of these mustard-seeds, after they been passed through him; and they produced just as good salad as if he had not used them. Fashionable people have always some whim about them;—they are always taking something; but I believe the day of mustard-seed has pretty well passed by. Mustard-seeds will accumulate,—just like other things.

In cows, you very frequently find, in the alimentary canal, concretions consisting of hairs. They lick their skin; some of the hairs go down the throat with the saliva; and concrete together into a hard ball. They are found, not only in cows, but in many other animals. Millers' horses are said to be subject to these concretions, from the grit of the stone-dust in the mills; and particularly, it is said, when they are fed upon bran. The poor people in Scotland, who eat oaten bread, sometimes have concretions of this description, —formed of the beard of the oat. The outside of such concretions as these, is like velvet.

It is found that the earthly phosphates are frequently mixed with

hair, the beards of oats, or whatever else may have been swallowed, and become cemented together by the phosphates and the mucus. Sometimes, instead of the phosphates being mixed up with the other ingredients, they form into a concretion around a nucleus;—just the same as takes place in urinary calculi. The ammoniacal magnesian phosphates, particularly, will form around a nucleus of any sort. Sometimes the nucleus has been stale fruit; sometimes a piece of bone; sometimes a pin that has been swallowed; and sometimes a gall-stone. We shall see that it is the phosphates, in particular, that are formed around a layer in the urinary organs. In some of these concretions, oxide of iron, oxalate of lime, muriate of ammonia, and muriate of lime have been found. There was a lady who was said to discharge a large quantity of stones, from the urinary organs; but whether she told the truth, I do not know. A medical gentleman was attending her; and he wrote to his friends in London, to know whether they had seen similar wonders. It was very singular that two ladies, in different parts of the country, discharged similar stones; and both cases happened to come within my knowledge. Whether there was any deception or not, we could not tell; but Dr. Prout considered that, if there was not, the stones must have come from the intestines. There was said to be excruciating pain attending their discharge. The stones have the same appearances, and the same chemical qualities; they contain oxide of iron, and phosphate of lime. Dr. Prout considered, that many of these were too large to have passed from the urinary passages; and that the number the patient stated she had voided, must be incorrect. It is true that very large stones will pass through the female urethra; but they would have caused more suffering in the bladder than she complained of.

These gastro-intestinal concretions are sometimes, of course, very large. I recollect having read of the case of a woman, in whose stomach they were found nearly as large as a hen's egg. The same writer mentions finding some, which weighed four ounces, in a soldier's stomach. In the colon of a young child, one was found which weighed two ounces and a half, and was six inches long. The child died in consequence of it. In the "Philosophical Transactions," for 1686, there is an account of a woman who discharged many, varying in size from a pea to a filbert; and the weight of which amounted, in two years, to five pounds. In the thirty-second volume of the "Philosophical Transactions," there is an account of a pregnant woman, who discharged some concretions that were very large. One of them weighed above two ounces. It is a fact, therefore, that such concretions do occasionally occur. Sir H. Sloane mentions a case, where two hundred were said to be discharged.

These concretions are much larger in brutes, than in the human subject; and also more common. In a brute, one has been found weighing fifteen pounds twelve ounces. They chiefly occur in ruminant animals, and in horses of slow-draught, and in miller's horses, which are fed on bran. Both in the brute and the human

subject, these concretions are spheroidal or oblong. They take an imperfect polish, are more or less porous, and either are radiated, or have layers. Biliary concretions of both kinds occur;—some disposed in radii, and others in laminæ.

Those which are taken in small ruminant animals,—such as the antelope or the goat,—are called *bezoars*. The word is said to be derived from a Persian compound,—*pa-zahar*;—meaning *alexipharmic* (from αλεξεω, *to repel*; and φαρμακον, *a poison*). Bezoars were once so valued, on account of their supposed anti-poisonous properties, that one in the East, when very fine, has been sold for six thousand livres;* and has been hired, in Holland and Portugal, at the rate of a ducat† per day. I have some specimens; but some of them are probably artificial; for being sold at a great price, they were imitated. They were formerly sold at druggists' shops; and those before me I procured from an old druggist's. They are said to have concentric layers; and sometimes to be chrystallized. They will take a polish, and even have a metalic lustre. Mine have evidently been stained. Sometimes there is an accidental nucleus within; and they will rattle. They are found to consist chiefly of vegetable matter; and some have an aromatic smell;—from the circumstance of the animal having eaten aromatic herbs. It is said that it is only those which come from the West, that take a polish; and that the Eastern have often a gloss of white. The mode of distinguishing the genuine from the spurious, is said to be this;—if you take a piece of paper rubbed over with chalk or lime, and draw a genuine bezoar across it, it turns it green, or of an olive-colour; whereas, if it be spurious, the colour of the paper remains unchanged. However, the matter now possesses very little interest; since a belief in their virtue is no longer entertained.

Concretions in the alimentary canal, if retained, give rise to violent vomiting; and to violent gastrodynia, dyspepsia, colic, constipation, and death. From the obstruction which they produce, you have all the symptoms of enteritis, or of colic, or of strangulated hernia. The treatment, whether you know the nature of the concretion or not, is the same as for colic or enteritis; but as I said before, it is well to ascertain the state of the rectum. By passing a clyster up the rectum, you will have the means of learning whether the obstruction is situated there. Sometimes these concretions have reached the rectum, before they have been stopped.

ENGLISH CHOLERA.

Having spoken of gastro-intestinal concretions, the diseases which I shall now proceed to consider, will all be affections both of the stomach and intestines; and the first of which I shall speak is cholera, (from χολη, *bile*; and ρεω, *to flow*). This disease is characterized by

* About two hundred and sixty pounds sterling.

† A coin so called from being struck by dukes; and (when in silver) worth about four shillings and sixpence.

a sudden attack of bilious vomiting and purging. At first the discharge is sometimes thin and watery; and has been called *white vomit*; but very soon pure bile comes away;—in fact, unless there be a discharge of bile, it is not cholera. Besides this discharge of bile upwards and downwards, the disease is marked by severe pain in the abdomen; with very severe spasms of the abdominal muscles, of the calves of the legs, and (in very bad cases) even of the neck and back. There is no rigidity, (constant spasm,) as in tetanus; but violent contraction alternating with relaxation, and drawing the muscles up in lumps. There is great anxiety and great debility; burning heat, generally, at the pit of the stomach; and,—as you may well suppose, from such a quantity of bile being poured forth, —there is thirst and headache. These are the symptoms which we see, every autumn, in this country. At last, however, from this violent pain, and from this profuse discharge, the body becomes cold; great faintness is felt; perhaps there is actual syncope; the patient sinks; loses his power; becomes excessively weak; and then every thing occurs exactly as if hæmorrhage had taken place. General convulsions come on; the spasm ceases; and the patient dies, as if he had lost an immense quantity of blood.

This affection may last only a few hours, or it may last many days. Every body must have seen it seize persons early in the morning; and the persons so seized be dead in the middle of the day. If it subside, it may possibly be followed by inflammation. I have frequently seen gastro-enteritis take place, after the discharge had entirely ceased. The bile is generally found to be very acrid; and the vomiting and purging sometimes alternate; so that the more the patient vomits, the less he is purged; and *vice versâ*. Besides the bile discharged, there is usually a great secretion of another fluid;—no doubt, from the stomach and intestines. The same state may arise occasionally, from an overflow of the secretion of the mucous membrane of the stomach and intestines.

Intermittent and remittent fevers, and dysentery, in hot climates, very frequently begin as cholera;—I might say, perhaps, *with* cholera. The disease is common in hot climates; and in mild climates in hot weather. Cholera is particularly induced by sudden cold, after long-continued heat;—just the same as inflammation. It is observed, that occasional falls of rain are particularly followed by cholera, in hot seasons, and in hot climates. Dr. Macculloch ascribes this disease to malaria; and probably that is one of the causes; but various things will excite it. Violent passion,—violent emotion of mind, will cause it. From the latter circumstance, people are often vomited or purged, and sometimes both; and the discharge will be green;—so that cholera is one effect of violent grief. Some persons have this from certain ingesta. Any acrid substance may induce vomiting, or purging, or both; and in this case the discharge may be green; and therefore the affection may be cholera.

The mode of treating this affection is, in the first place, to give plenty of chicken-broth, or any other diluent; so as to dilute the

acrid bile, which produces such unpleasant effects on the stomach and intestines. You should also exhibit large doses of opium; either in the tincture, or in a solid form. Perhaps the latter would stay best on the stomach. It may be necessary, from the extreme weakness, to give brandy and other stimuli; and to have recourse to the hot-bath. The greater number of cases of cholera that we see, will do well if you give the patient warm diluents;—so as to dilute the bile, and assist nature to discharge it with as little irritation as possible to the stomach and intestines. But it is nevertheless advisible to lessen the disease, at the same time, by exhibiting full doses of laudanum. When the patient is weak, it may be necessary to have recourse to stimuli;—just as in the case of hæmorrhage. Should the disease chiefly consist of vomiting, it may be desirable to send the bile downwards; and calomel will then be the best medicine. It stays better on the stomach than any thing else. An injection may be found very useful. If the case be taken in time, and this mode of treatment adopted, it is very rare for patients to die. You have carefully to examine whether there is any congestion in the head, or any inflammation. After a time, these are very likely to occur; and it is necessary to treat them as you would in any other circumstances. After the disease, it may be necessary to give tonics, and to support the strength; or inflammation may come on; and then it may be necessary to bleed. Sometimes, after the affection has declined, the diarrhœa continues; and it may be necessary to check it in the usual way. But it is requisite to ascertain whether it is accompanied by inflammation or not; for it very frequently is.

This is cholera,—properly so called. As to that disease which has so unfortunately received the same name, and respecting which so much has lately been said, I shall speak of it next.

EPIDEMIC CHOLERA.

In 1817 a disease appeared in India, in some particulars like English cholera;—so far as there is a discharge upwards and downwards, severe pain in the abdomen, cramps of the extremities, and at length of the whole body, with great exhaustion. From its resemblance, in these particulars, to the other disease, it was unfortunately called *cholera morbus*; but there is this decided difference in the two affections;—that in what we understand (or did understand) by "cholera," the motions are all bilious; but in this, which broke out in India in 1817, the motions have no bile in them whatever, but are perfectly white and watery. On this account, if it were necessary to borrow a name from another disease to give to this, it would be better to call it *leucorrhœa* than "cholera." The discharge being white, "leucorrhœa" (from λευκος, *white*; and ρεω, *to flow*), certainly would have been a less objectionable name.

In the disease which broke out in India, the first symptoms were languor, uneasiness at the stomach, nausea, and common diarrhœa; and then, all at once,—about three or four o'clock in the morning,—violent vomiting and purging occurred; though, occasionally, these

took place without any premonitory symptoms. At the same time, or very soon afterwards, excessively severe spasms were felt in the extremities, and in the abdominal muscles; so as not only to make the patient exclaim with agony, but sometimes to make it necessary to call in the aid of several persons to hold him. The countenance, in a short time, became ghastly; the skin shrivelled; the features contracted and elongated; the eyes a little suffused, slightly tinged with red, and sunk in the sockets; the lips purple, or of a black cast; the base of the eyelids likewise purple; the skin and the nails blue; and the fingers not only shrunk, but shrivelled;—exactly like the hands of an old washerwoman. At the same time, there was extreme thirst; with a great sensation of heat in the throat. The temperature of the whole body was excessively low; the tongue and the breath were cold; sometimes the tongue was quite clean, and of the colour of lead; but occasionally it was white, and had a tough, or (as it has been described) a leathery coat; and occasionally it was covered with sordes, but by no means always. The pulse became exceedingly weak, and exceedingly quick; and at last it could not be felt at all in the wrists, though it might still be perceived at the heart. Extreme restlessness took place; so that the patient could scarcely bear the bed-clothes, and endeavoured to toss them off. The breathing, like the pulse, became more rapid than in health. It was found that, in the expirations, only one-third of the usual quantity of carbonic acid was given off. The blood that was taken was found to be thick;—some say pitchy and uncoagulable. The venous and arterial blood were equally black; and, in the worst cases, the blood would not flow at all. It was likewise observed that no urine was discharged. Deafness was noticed as a frequent symptom; and also tenesmus. Occasionally, however, there was scarcely any vomiting; but extreme debility; together with extreme loss of bulk, shrinking of the body, the corrugated state of the fingers, and the violent spasms. These cases were considered to be worse than those in which vomiting and purging took place. This disease differs from our cholera, in there being danger where there are scarcely any evacuations;—the danger of the disease not depending upon, and not being in proportion to, the loss of the substance of the body. Sometimes it is said that, in addition to there being neither vomiting nor purging, no spasm was felt; and this was considered still worse. The patient was said to be "struck with death;" his pulse became imperceptible; and death very soon closed the scene.

There was great irregularity as to the occurrence of these things. Patients sometimes vomited and were purged, before they experienced spasms; and sometimes spasms occurred at the onset of the disease. Occasionally, blueness of the nose and about the eyelids was not observed; and sometimes there was no corrugation. There was by no means uniformity in the symptoms. Before death, it was very usual to find the spasms, the vomiting, and the purging cease; and for the patient to lie perfectly still, with the loss of the

vigour of his mind, but with a perfect preservation of his reason. He would be conscious of all around him, but wish not to be disturbed; and he would take no nourishment. He would remain tranquil; as if he were waiting for the moment of death. When the patient was lying in this quiet state,—patiently waiting, as it were, for death,—the pulse at the wrist would not only be still, but sometimes the action of the heart could not be felt;—at least it was so said. Whether the ear was employed to ascertain whether the heart acted or not, I do not know. I presume it is common enough, in different diseases, for the pulse not to be felt, when the heart still continues to beat. Before death, it was occasionally noticed that the temperature would return; and hopes of recovery were sometimes entertained; but these were, for the most part, unfounded; for the patient presently sunk. It was likewise observed that, after this extreme exhaustion, the face would sometimes become flushed, the temporal arteries become distended and throb, and the patient lie in a somewhat delirious or comatose state;—much in the condition of a person in typhus fever. The voice was weak and very peculiar. The duration of the disease was sometimes only a couple of hours; and sometimes it would not destroy life for the greater part of a day. After death, an immense quantity of white turbid fluid, with flakes of a very white substance, were found in the stomach and in the intestines; while no fluid whatever was found in the urinary bladder, and that organ was contracted to the smallest possible size. These were general occurrences. It was usual for neither fæces nor bile to be found in the alimentary canal; but the gall-bladder generally (not always) was found full, and sometimes it was remarkably distended;—so that there was no want of bile, but none passed into the alimentary canal. The veins were usually found greatly distended with blood; so that the hepatic, intestinal, and mesenteric veins, were remarkably distended; but those of the spleen were not quite so full. Congestion also occurred very frequently in the lungs and in the head. Sometimes there was a rosiness of the external surface of the alimentary canal; and sometimes of the *internal* surface. There was usually, too, a great congestion of blood in the heart itself. The abdominal muscles were found, by Dr. Davy, to be flabby and red; but, of course, not inflamed. The urinary bladder,—although containing no urine, and being so greatly contracted,—had generally a sort of whitish mucus, with flakes, upon the inner surface. After death, one very remarkable phenomena presented itself; which was, that the temperature of the body was higher than during life; so that a very high degree of heat was found, on plunging the hand into the body. Another very remarkable circumstance is mentioned;—the occurrence of a twitching of the different muscles of the body, after the person was completely dead. The fingers, the toes, and every part of the face, were seen to move. Observations of this description were made on two subjects;—the one a Caffre, and the other a Malay. The former died twenty hours after the first seizure;—the complaint baffling the most powerful remedies. In fifteen minutes after he

expired, the fingers of the left hand were observed to move; then the muscles of the inside of the left arm were contracted in a convulsive manner; and the like motions were slowly propagated upwards to the pectoral muscles. The muscles of the calves of the legs contracted in like manner;—bundles of their fibres being drawn together, in a tremulous knot. The muscles of the inside of the leg and thigh were forcibly contracted, in a vermicular manner. The muscles of the face and lower jaw were similarly affected; and, finally, those of the right arm and right pectoral muscle. These motions increased, in extent and activity, for ten minutes; after which they gradually declined, and ceased twenty minutes after they began. With regard to the Malay, about fifteen minutes after he expired, the toes began to move in various directions; and the feet were made to approach each other. Muscular contractions were speedily propagated upwards, along the inside of the legs and thighs. The thighs were turned slowly inwards, so as to approach each other, and again outwards;—the whole of the lower extremities moving on the heels, as on pivots. These motions proceeded upwards;—producing a quivering in the muscles. In five minutes, the upper extremities began to be similarly affected. The fingers were extended, and often rigidly bent inwards; and pronation and supination of the hand were steadily, though slowly, performed. The same quiverings were observable as in the lower extremities; and extended to the pectoralis-major muscles, and the superior margin of the latissimus dorsi. The muscles of the face moved; and the head was observed to shake. The total duration of these appearances, was half an hour. By moving or pricking the arms or limbs, these contractions were rendered stronger, and were again renewed where they had ceased.

This is the account which has been given by various writers, who witnessed the disease in India. I will now describe to you the disease which has lately prevailed in London.

Among the patients whom I have seen, there has been a great variety as to the mode of attack; and as to the order of the symptoms after the disease has begun. With regard to the first point,—the mode of attack, some persons have been seized suddenly; while others have had diarrhœa for some time previously. Those who were suddenly attacked, were generally seized early in the morning, after going to bed perfectly well; and discharged, by vomiting and purging, a turbid whitish fluid, containing white flakes. There was violent pain in the abdomen; violent pain in the extremities; and dreadful cramps in the fingers, toes, arms, and legs. In two or three hours from the moment of the attack, I have seen the eyes sunk in the sockets; blueness round the base of the eyes; blueness of the nails; in some cases, blueness somewhere upon the extremities; in one case, blueness of the whole body; no discharge of urine; intense thirst; a great sensation of heat within; extreme restlessness; the tongue of a colour like lead; and (in the case in which the body was blue all over) covered with a white and leathery crust; a very feeble pulse; and, at last, no pulse whatever in the extre-

mities, although it could be felt at the heart. The pulse and the respiration were very rapid. I have counted the respirations at thirty-six in a minute. There has been a great fall of temperature; so that the hands, the tongue, and the breath (as it came from the body) were cold. On passing a thermometer into the mouth, I have found it as low as *eighty-four* degrees;—ranging only, at any rate, between *eighty* and *ninety* degrees. There has been a cold sweat on the extremities; and then, at last, the patient would remain free from all restlessness;—free from pain,—free from vomiting; and would lie perfectly still, conscious of everything, but with a desire not to make the least exertion,—apparently tranquil, and waiting for his dissolution. Then, before death, I have noticed the temperature rise,—the coldness cease; and after death the temperature has risen still more. I may mention that, in the case where there was such great blueness, no sooner had the patient expired, than the blueness was diminished. I did not observe whether it diminished before death, but I noticed it immediately afterwards; and, in an hour, there was nothing of the colour to be seen. There was a twitching of the muscles; so that one finger, after death, would be drawn in, and then another; and the lower jaw would move up and down; and you might see a quivering of the muscles inside the thighs. The voice was weak; and there was a great peculiarity in it.

After death, the stomach and intestines were usually found filled with a white fluid, containing white flakes. There were various appearances of the alimentary canal, both internally and externally. Sometimes it was rosy, and sometimes pale. The urinary bladder was empty, and exceedingly contracted. The congestion in the venous system was very great. The mesenteric veins were full; and the venæ cavæ appeared distended to the utmost. They looked like a bell-rope in a drawing-room. The heart was observed to be full; and the blood, both in the ventricles and auricles, was grumous,—half coagulated. There was sometimes congestion in the head; and sometimes in the lungs.

No one possessed of common sense can doubt, for a moment, that the disease which occurred in India, and that which we have seen here, are precisely the same. I should think no one can doubt, that it is different from the disease commonly called *cholera*; which is marked by a discharge of bile, and in which the danger is in proportion to the extent of the evacuations. It cannot be said that this disease is only a severe form of common cholera; because the mildest cases are not at all like common cholera;—they are not characterized by a discharge of bile. If it were cholera, only very severe, the mild cases ought to be equal to the very severe ones of the common cholera of this country; but instead of that, they are all characterized by an absence of bile, and by these peculiar dejections.

Again, it has been said that this disease is not only essentially common cholera, but that it is a disease we have all seen. I raise my voice in saying, that it is a disease which I never saw before;

and I think that, if it had previously occurred in London, I, from being connected with a large institution,* should have seen it; but I certainly never saw any affection that bore the least analogy to it. It would not be more absurd to say, that measles and common bronchitis are the same, because in both there are certain morbid appearances in the air-passages; than it is to say that, because there is vomiting and purging in this disease as well as in common cholera, that they are the same. A variety of diseases of the skin, which are distinct from each other, have an appearance in common; and measles, scarlet fever, and other affections, were formerly all jumbled together. No diagnosis was made between them;—simply because there was redness of skin.

If you look at Celsus and Sydenham, you will find that the cholera which they describe, is very different from this affection. Sydenham says it prevails at the end of summer and during the autumn, as regularly as vegetation comes in spring; whereas this disease occurs at all seasons, and has no connexion whatever with heat. Sydenham describes it as a discharge of *bile*; and not of the peculiar fluid which we see in this affection. I cannot but believe that it is totally distinct from common cholera; and that it is a disease never seen before in England. I have conversed with practitioners older than myself, —with men of the greatest experience; and they declare that they have never met with such a disease before.

I may now detail some few particulars respecting the disease. It was thought, in India, that the natives suffered from it more than the Europeans. Thousands of natives perished near Bombay; while of the Europeans, who had good food and good clothing, six only were affected. It was found to attack those who had the worst diet, who were the worst clothed, and were worst of in all respects. It was found to prevail at all temperatures, and all seasons;—in *healthy* and in *unhealthy* situations; both in *dry* and in *moist* places. It prevailed in spite of the monsoons; and not only in every direction of the wind, but in all hydrometic states of the atmosphere. There was great doubt whether it was contagious or not. Some thought it proceeded where there was no communication, just as well as when there was. It was found suddenly to stop without any apparent reason, and then to go on again;—to pass from one district to another, as regularly as any other disease would; and then, as soon as it ceased in one place, it would begin in another. It was said that it broke out in the Mauritius, three thousand miles from a place where it had prevailed; but it was after a vessel had arrived from that spot. If you read the accounts of the disease as it appeared in different countries, you find a mass of evidence tending to prove that it is contagious; and then you find a mass of doubtful circumstances, which unsettle your mind again.

I need not say that it turned, at last, towards Europe; and proceeded, pursuing a north-westerly direction, till at last it reached this country; and with all the observations that can be made, it is

* St. Thomas's Hospital.

still a matter of doubt whether it is contagious or not. The particulars observed here and on the continent, however, perfectly agree with what I have stated; namely, that the poor have been affected much more than the rich; and that those who are the worst fed, clothed, and lodged, have all suffered in the greatest degree. We have a striking example of this, so far as the disease has hitherto proceeded, in contrasting its ravages in London, with those it made in Paris. Here the greater part of the people are well fed;—better fed than in any other part of the world. They eat more flesh; and that flesh is of such a quality, as is scarcely to be found in any other country. Besides this, they are better clothed, and more comfortable; and instead of trashy wines, they have good sound ale and porter, and malt liquor of all kinds. But in Paris the air is bad; the people have very little water; and the water, for the purposes of consumption, is very bad. The inhabitants are crowded together,—I know not how many families in a house,—with little ventilation. The streets are narrow; and, together with this, the houses are dirty. The population live upon what we Englishmen consider trash;—not roast beef and mutton; but all sorts of dishes made up of bread and vegetables, with a little meat boiled in water to colour it, or to give it a flavour; and they drink, not good beer, but thin wine; and we all know that this disease has committed infinitely more ravages,—done infinitely more mischief there, than it has here. This completely accords with what was observed in India.

With regard to contagion, we have in this country many observations, which tend to shew that the disease is contagious; and then, again, we have cases occurring, where we cannot imagine communication could have taken place. You will see, in the "Medical Gazette," (Volume X. Page 31), a reference to a work by Dr. Haslewood; in which several facts are mentioned, which go to shew the contagiousness of the disease; and these, together with facts which I have noticed myself, have created a strong suspicion in my mind, that it is contagious. But while I am inclined to believe that to be the case, yet I am also satisfied that it will spread without contagion at all. It may spread independently of contagion; but if the disease do occur in an individual, I cannot but think that that individual may communicate it to another. Of course you will find a large number of exceptions to its spreading, where you might, *à priori*, expect that it *would* spread. The disease has great difficulty in attacking those who are in good health, and well off; and in this respect it differs from syphilis, itch, and small-pox; and therefore, though thousands may be exposed to the contagion of the disease, (if contagion really exist), yet they will be almost sure to escape. This must be taken into consideration, when you consider whether the disease is contagious or not. If a number of persons be exposed to it, and escape, yet that is nothing more than we should expect.

With regard to the *fatality* of the disease, it was observed, in India, that much good was done by medical treatment. It is said that, at Bombay,—where there were from two hundred thousand to two hun-

dred and twenty thousand inhabitants,—there were fifteen thousand nine hundred and forty-five cases. Of these one thousand two hundred and ninety-four took no medicine, and all died; but where medicine was employed, the deaths were much reduced. It was supposed there,—at least, it was so stated in books at the time,—that by the administration of large doses of calomel and opium, occasional bleeding, and the hot-bath, great good was effected; and that many lives were saved. Some persons gave calomel in *small* doses; and some gave scruples, with a drachm of laudanum;—altering this according to circumstances. Others bled their patients, when they could get blood to come; and it was said that that treatment, also, was very successful. Some practitioners adopted both plans. Some strongly recommended the use of magnesia, and other absorbents. Indeed, one celebrated writer says, that magnesia and absorbent specifics have saved thousands of lives. Such was the treatment there; and the success, as I have stated, was considered to be very great.

It was well ascertained in London, that not only those who were badly off, and in bad health from some other disease, but those who are in the habit of drinking spirits, have been very liable to the disease. I do not know that such an observation was made in India; but I presume that drunkards there suffered,—the same as here. In Europe, however, it is an undoubted fact, that that portion of the lower orders who had every thing calculated to keep them in good health, but who indulged in spirit-drinking, were sure to suffer; and this has been observed with regard to other diseases. However well persons may be off, yet if their body be enfeebled, they are rendered increasingly liable to the disease.

With regard to the treatment in this country, I cannot but think that if all the patients had been left alone, the mortality would have been the same as it has been. I think that, if all the persons attacked with cholera had been put into warm beds, made comfortable, and left alone,—although many would have died who have been saved,—yet, on the whole, I think the mortality would not have been greater than after all that has been done; for we are not in the least more informed as to the proper remedies, than we were when the first case of cholera occurred;—we have not been instructed, in the least, by those who have had the disease to treat. Some say that they have cured the disease by bleeding; others by calomel; others by opium; and others, again, say that opium does harm. No doubt many poor creatures have died uncomfortably, who would have died tranquilly if nothing had been done to them. Some have been placed in hot water, or in hot air, and had opium and calomel, and other stimulants; which, altogether, were more than their system would bear, and more than would have been borne if they had been so treated even in perfect health.

I am sorry to say that, of the cases I have had to treat, the patients have nearly all died. I tried two or three sorts of treatment. Some had opium and calomel, in large and full doses; but they died. Hot air was applied externally; and I got two to *breathe* hot air. I had a tube passed through boiling water; so that they

might inhale hot air. It was found vain to attempt to warm people by hot air applied *externally*. They were nearly as cold as before; —you could not raise their temperature; and therefore I thought of making them breathe hot air; but both patients died, about the period that death usually takes place. It was said that saline treatment was likely to be of use; and I accordingly tried it in some patients. At first I exhibited half a drachm of carbonate of soda, every hour; and thinking that might not be quite enough, I exhibited a drachm; and in one patient at St. Thomas's Hospital, I ordered an injection containing an ounce of the same remedy; but the greater part of it came away, and the patient died. Hot air was used in this case, as well as in the others.

This leads me to speak of the chemical qualities of the blood, and of the discharge from the alimentary canal. It has been said that the contents of the latter were *alkaline*; but I examined that point, in several cases where no alkali had been taken; and so far from the observation being correct, I found them exceedingly *acid*. In the case of a man who was blue from head to foot, and who had twitches after death, the contents of the stomach were exceedingly acid; but the intestinal matters were less and less so, as we went downwards, till we got to the large intestines; and there they were natural. In the patient who took large doses of the carbonate of soda, and had an ounce thrown up, the contents of the stomach were then only neutral, while those of the intestines were acid. When we came to the rectum, where some of the carbonate of soda that had been injected still remained, they were alkaline. The cases that I have examined, have not been numerous; but in all of them the contents have been principally acid; and in no case were they alkaline, except in the one I have just mentioned.

Dr. O'Shaughnessy has published some observations and experiments on this subject. He says:—"The summary of my experiments may be described as denoting a great, but variable deficiency of water in the blood, in four malignant cholera cases; a total absence of carbonate of soda in two of them; its occurrence in an almost infinitesimally small proportion in one; and a remarkable diminution of the other saline ingredients in all." It would appear, from these four cases, that there is less serum in the blood; and therefore you see why it is thicker in this disease than in health; and that there are also less saline ingredients in it. "Again," he says, "in the dejections passed by one of the patients whose blood was analyzed, we found a preponderance of alkali; and we recovered the other saline matters deficient in the blood." Thus he supposes that the blood loses its saline particles; that they are discharged into the intestines; and that you find them there, in the same proportion as the blood has lost them. But although that may be the case, it is not clear that the dejections are of an alkaline quality;—that is to say, that there is an excess of alkali in them.

I really can tell you nothing with regard to the treatment; but I know that patients feel intense heat within, and intense thirst; and

that they find great comfort from cold drinks. I understand that, in Vienna, the custom was to allow ice; which the patients took with great avidity, and derived great comfort from it.*

DISORDERS OF THE DIGESTIVE ORGANS.

The disease of which I shall now speak, is commonly called indigestion; but I would rather speak of it under the denomination of "disorder of the digestive organs at large;" because "indigestion" applies to affections simply of the stomach; whereas this affection implicates the intestines as well as the stomach; and, indeed, all the organs concerned, not only in chylification, but also in excretion.

Now "indigestion" is usually termed in medicine *dyspepsia*; and you will sometimes find it mentioned under the name of *apepsia*; the one meaning "*difficult* digestion," (from δυς, *difficulty*; and πεπτω, *to concoct*); and the other "*no* digestion" at all, (from α, *privative*; and πεπτω, *to concoct*). However, these all mean precisely the same thing. We are now, therefore, to consider that derangement of the digestive organs, which is generally attended with indigestion; but many of the symptoms of which take place *without* indigestion. Many persons will digest very well; and yet, when they have no food in the stomach, they are filled with wind. But this ceases on food being taken.

If any organ in the body suffer severely, the stomach is very much disposed to sympathize with it. The stomach, the heart, and the head, are particularly affected when any material derangement occurs in the frame,—the stomach more particularly, perhaps, than either of the others; and the intestines generally become more or less affected at the same time. You know that, in all acute diseases, —in all violent accidents, the stomach feels the shock. There is anorexia (loss of appetite), frequently nausea and vomiting, and either costiveness or purging. The fæces generally become depraved in their quality; uneasiness is usually felt in the stomach or intestines: and there is perhaps, even pain and tenderness. Very frequently, the patient is rendered more uncomfortable by the sympathetic disturbance of the stomach and bowels, than by the original affection itself. In chronic diseases (as, for instance, diseases of the heart, liver, and lungs) the stomach and intestines are most mate-

* We have already spoken (see page 247) of the admirable arrangements adopted at the Cholera Hospital, Drummond Street, Edinburgh; under the able superintendence of Dr. Mackintosh, and Mr. Meikle, E.I.C.S. Since that note was written, intelligence has arrived in England of the death of the last-named gentleman, after nearly thirty years' active and efficient service in India. The premature decease of both these highly qualified and enterprising medical officers, leads us to fear that the records of the Hospital in question,—in which every feasible plan of treatment was tried, and every fatal case was followed to the dissecting-room,—are now not likely ever to be laid before the profession at large. We happen to know that an extended series of cases was prepared for publication with great care; and we regret that the publication thus intended never took place. In the Appendix, No. XIII, we shall give a specimen of these cases; in illustration of Dr. Elliotson's remarks on the treatment and morbid appearances of Malignant Cholera.

rially affected. But besides these effects,—mere *sympathetic* occurrences, from the derangement of other organs,—we have these parts deranged *originally*.

I will now proceed to consider all the symptoms, which characterize those affections which pass, every day, under the name of "derangement of the digestive organs." In the first place, loss of appetite is a very common symptom; and this is called, in medical language, *anorexia*, (from α, *privative*; and ορεξις, *appetite*, sometimes, however, the appetite is not *lost*; it is only *irregular*;—the patient being able to eat well one day, though he cannot eat another. Sometimes the anorexia amounts to loathing;—the patient not only cannot eat, but the idea of it disgusts him.

Sometimes the appetite is not simply *deficient*, but is *depraved*. This is particularly seen in females; and is called *pica* (*a magpie*; —an animal said to be subject to this complaint). You will sometimes see young ladies long for chalk, cinders, or sand; and they will bite glass,—munch it; and when it is small enough, they will swallow some of it. I saw a lady, the other day, who ate *brown* paper; not paper hot-pressed and gilt-edged, but *brown* paper. She longed for something to eat; but did not know what. She wished for something that she had never ate before; but she could not tell what;—nor could I. I have heard of cases where the patient longed for raw flesh, and even for *live* flesh; so that some have eaten live kittens and rats. This is an absolute fact. In the same way, some have been known to long for the contents of snuffers; and even for manure. A case is described of a man who ate a live pig,—leaving the intestines; but, after a little while, he ate them also. There is a case described, at full length, in a German work, of a boy who had such a longing for lime, that he ate all the mortar he could pick out of the wall; and being well horsewhipped for it, he then commenced on a *neighbour's* wall. In order to prevent this however, the neighbour smeared the wall with a decoction of wormwood, and the boy could no longer relish it; but he then went to the kennel in the street, and sucked up the sand. He had a desire for something dirty. After this he got to some quick lime; and was forced to drink a large quantity of water, to extinguish his thirst. The mucous membrane within, had a distaste for what is called "*good* food;" but, in other respects, he was quite well. I recollect having read of a girl, and also of a student at Leyden, who always ate spiders when they could get them; and no harm arose from it. I have read of a man who disliked bread, and never ate it; but he was seized with a quartan ague, and then ate a large quantity. He recovered from the ague; and the disgust towards bread returned again. You know that this disease occurs in young women (even moral ones) who do not menstruate well;—as I mentioned when speaking of chlorosis; and many pregnant women have some strange longing of this description. Every one must have met with instances of women longing for what it was difficult to get;—longing for things out of season. There was one who longed for a bit of the priest's sleeve, and contrived to get at it and bite it;—not caring for

his excommunication. I could relate cases, almost without end, of this description. One dipped her bread in a tar-tub. I never met with these extreme cases; but every one must have read of instances of this nature.

Sometimes, however, the appetite is *excessive*; so that people will eat an immense quantity. This is called *bulimia* (from βου, *excessive*; and λιμος, *food*). You will recollect that I mentioned, when speaking of fever, that this has sometimes occurred as a temporary symptom of another disease. People will eat many pounds of meat and bread, in the course of a day.

Besides these affections, the stomach sometimes experiences attacks of nausea and vomiting. Some vomit only the food they take; others vomit a viscid secretion. Some vomit more or less constantly; and some vomit only in the morning;—and, in the latter case, it usually arises from drinking. When the disease has become very severe, some will vomit on the slightest motion. Then again, you will frequently find people, labouring under this affection, complain of intense thirst; and their tongue is foul, and covered with a yellow or a creamy mucus. Sometimes it is white, dry, and brown; but whatever appearance it has, it is worst in the morning. It is frequently red at the same time,—either at the tip or at the edges. Sometimes it is the papillæ only that are red. They appear separate;—like granules of cayenne pepper. Sometimes the tongue is red all over; and it may be moist, dry, glazed, or cracked.

There is frequently fœtor of the breath. Sometimes the smell is sour;—sometimes it gives you the idea of sour flesh; sometimes it is like cabbage-water; and occasionally it is absolutely fœcal;—so that it is impossible to stand near the patient. I mentioned that the most horrid kind of fœtid breath, frequently arises from a depraved secretion within the tonsils. Of course you will have a diseased odour of the breath, from other circumstances than any of these. It will arise from a diseased bone; and sometimes even from carious teeth. This is not so disagreeable to others; but it is very unpleasant to the patient himself,—from there being a bad taste in his mouth. Sometimes the taste is bitter; and sometimes, they say, it is particularly offensive.

Eructations are very common in this affection; and these may be either simple or fœtid. Those which are inodorous, are generally experienced when the stomach is empty; and probably arise from a secretion of air by the surface of the stomach; but those which are fœtid arise, I presume, from the contents of the stomach undergoing a certain degree of fermentation, or sometimes from the patient being costive. It appears that a portion of the fæcal odour, if not of the fæces, is absorbed; for some persons who are exceedingly costive, have very fœtid eructations; which are removed by regulating their bowels. In some persons, it is only when certain articles are taken, that the breath becomes offensive. Sulphuretted hydrogen appears to be given off from the substances in question.

It is very common for the mouth to become filled with watery fluid; and often very suddenly. Sometimes you will see the patient's

mouth constantly open. I have seen patients spit a pint a day. Occasionally the fluid is tasteless; but more frequently it is salt, or sour; and occasionally it is very acrid indeed;—containing a large quantity of muriatic acid. I believe it is often felt to be very cold. Patients complain of its coming up, as if it proceeded immediately from a spring. Independently of this fluid, there is frequently an excessive quantity of viscid mucus;—chiefly hanging from the pharynx; and causing a constant desire, on the part of the patient, to hawk it up. Many cases of this description, are mistaken for affections of the air-passages. I was myself, for some time, completely in the dark respecting it;—conceiving that persons had a constant discharge from the air-passages, when they had nothing more than indigestion. The vomiting may either be of simple food which has become exceedingly sour and acrid, or fœtid; or it may be of bile; so that you have every variety of vomiting;—just as you have every variety with regard to the appetite, with regard to the appearance of the tongue, and with regard to the eructations.

To descend lower, there is tightness and fulness of the abdomen; —chiefly at the epigastrium, and chiefly after meals. Frequently there is an aching there; and sometimes excessive pain. Occasionally this is experienced only after meals; and occasionally only when the stomach is empty. This pain, if it be unaccompanied with inflammation, passes under the name of *gastrodynia* (from γαστηρ, *the stomach*; and οδυνη, *pain*); and if, with this, there is a flow of fluid into the mouth, the two circumstances together are called "water-brash," or *pyrosis* (from πυροω, *to burn*). The pain is sometimes sudden,—comes on instantly, or at least very rapidly; and is excruciating. It darts back, perhaps, to the spine; and causes the extremities and face to become cold, the pulse to be small, and the surface pale. It passes under the name of "spasm of the stomach." Very frequently, at the same time, there is a large discharge of flatus through the œsophagus;—flatus which is usually inodorous. This pain frequently runs to the left shoulder, and down the left arm;—like the pain experienced in *angina pectoris*. I have known it run down both arms, and also run up the jaws, and along the teeth. Sudden attacks of this affection, are seen more commonly in women, than in men. The pain is not always felt precisely in the situation of the stomach itself; but occasionally in the shoulder-blades, and occasionally in the ribs;—even in those which are not over the stomach; though the pain is dependent on that organ. In my own case, I have occasionally laboured under this pain severely; and I have been able to get rid of it by putting my fingers into my throat, and discharging a quantity of sour stuff. When the pain in the ribs returned again, by making so slight an effort as hardly to be called "vomiting," but sufficient to discharge a quantity of stuff like bird-lime, I have invariably found the pain go away. If I had not paid attention to the stomach, I could not have believed that the pain arose from that organ. The pain is sometimes felt even at a distance;—in the calves of the legs, for instance. Frequently, when

there is much disturbance of the stomach, the legs fall into a state of violent cramp; the most common cause of which, is the presence of acid in the stomach.

Besides this *spasmodic* pain,—which, for the most part comes on suddenly; or, if it exist constantly, is attended with exacerbations; and is not increased by pressure, there is frequently *inflammatory* pain;—not *gastrodynia*, but *gastritic* pain; so that the stomach is tender on pressure, and all ingesta produce great agony. A sensation of heat is induced in the stomach, and up the throat. In some cases, you will find a throbbing of the epigastrium,—a violent pulsation; which no doubt has been mistaken, over and over again, for aneurism; and which patients themselves are inclined to believe is aneurism; because, in this state of things, they are much disposed to despond. This has been called *cardialgia* (from καρδια, *the heart*; and αλγος, *pain*); and has been referred, by Sauvages, to a morbid sensibility of the part. Dr. Baillie wrote a paper on this subject, in the first volume of the "Transactions of the College of Physicians;" in which he stated that he had been consulted, several times, on this affection; which had been supposed to be aneurism; but whieh he had not found to be so. He opened persons who died from some other disease, while labouring under this; and found nothing morbid. It is a common symptom;—one which I have frequently been consulted upon; but you find no tumor. On pressing the part, you feel the shape as usual; and you find, at the same time, a great depression of spirits; and, more frequently than not, various symptoms of disorder of the digestive organs. On looking over Sauvages, I find he has described it as a dyspeptic symptom; and has referred it to a morbid sensibility of the arterial system of the part. He says it is certain that the gastric arteries and the aorta, although not affected with aneurism, yet, in those who are constantly hypochondriacal and hysterical, acquire an exquisite sensibility, and produce this state. Occasionally the heat is far beyond what I have just mentioned. It is a *burning* pain; and patients usually speak of it as a "*burning* sensation." It arises, in most instances, from the quantity of acid produced in the stomach; and if there be any inflammation of the mucous membrane, the pain will be proportionately severe.

The bowels are generally irregular; and, for the most part, they are torpid; but sometimes they are relaxed. In other cases you find an alternation of costiveness and relaxation; so that they are never right. The fæces, too, are frequently unhealthy. Frequently you observe them lumpy; but they are of various morbid degrees of consistence, and of various morbid colours; and frequently they are not of their usual smell. Sometimes there is a great want of bile; and sometimes there is even a degree of icterus. From the irritation of the stomach, the urine usually becomes high-coloured; but at other times,—especially when there is a great quantity of wind generated in the stomach itself,—the urine becomes excessive in quantity, and pale;—just as in asthma.

Other parts of the body, however, suffer as well as the gastro-intestinal, or (as it is used to be called) the alimentary canal. There is frequently headache,—either general, or particularly in the forehead; and very frequently it is confined to one part of the forehead,—to one brow. Sometimes it is intermittent; and sometimes absolutely periodical. I have no doubt, however, that occasionally this headache does not arise from the state of the stomach; for disturbance of that organ may be produced by cold, or vexation of mind; and then, when it comes to be very severe, it will make a person sick. On the other hand, it arises every day from taking things into the stomach which disagree with it. I formerly mentioned how hereditary this description of headache is,—how frequently we see it in fathers and in children;—how frequently it occurs in many members of the same family. Sometimes it will come on at *regular*, and sometimes at *irregular* intervals;—disappearing, perhaps, after a certain number of years. It is so obstinate, that I do not recollect curing a case of it; though I have tried every thing that could be devised.

Frequently, in this disease, there is confusion of mind. Patients cannot apply themselves as they did before. They cannot read long; and I have known some obliged to give up study altogether. Frequently there is vertigo, heaviness of the head, and sleepiness; but, on the other hand, when the stomach is much deranged, it is common for persons to lie awake;—they find it impossible to go to sleep. There is frequently, too, a ringing in the ears,—*tinnitus aurium*; and specks appearing before the eyes,—*muscæ volitantes*. There is frequently great sadness,—great depression of spirits. Patients are very restless and fidgetty; and sometimes their temper is very irregular; so that you must take care not to say many things which, at other times, you might say with impunity. Voltaire, you will recollect, gives special directions to those going to ask a favour of the Prime Minister. He tells you to ascertain whether he has had his bowels opened in the morning;—so much does temper depend upon the alimentary canal. He says you should always go to the *valet de chambre*, and ask if all has gone on regularly; and if you find that it has, then you may ask your favour.

The heart also sympathizes with the stomach. There is frequently palpitation in these cases; and sometimes an intermittent pulse. Frequently there is night-mare, or terrific dreams. A partial consciousness, and yet an inability to make a voluntary exertion, come on during sleep; but when patients can make an effort, they imagine they get out of this condition. Incubus is a very common symptom. There is frequently, too, a sense of great debility; which is felt particularly at the pit of the stomach. You hear patients complain of this every day;—they say they feel as if their inside were all gone to decay. Sometimes there is a tremor of the whole body. The skin likewise suffers. It is generally dry and cold; but sometimes it is hot.

Persons sometimes have merely an inability to digest food; and are very well so long as there is no food in the stomach. But true

dyspepsia,) that is to say, that affection which depends upon the stomach performing its functions improperly; and which is worse after eating, or indeed is only experienced then) is attended with other symptoms. There is loss of appetite, vomiting, distant pain, and the other symptoms which I have mentioned; but you will frequently have these without much indigestion. You will find persons complain of a great sinking at the pit of the stomach; they will also have gastrodynia and pyrosis; and yet they will digest their food well,—have no dyspepsia; although there is derangement of the stomach. They are very well when they take food; and only suffer when the stomach is empty. Some of these things are merely called "indigestion." Some patients have none of these symptoms; and some may have one or other, or both together. Persons who suffer in this way, frequently become pale and emaciated. They live many years; but they are never well. They are not ill enough to die; but their complexion becomes altered.

The cause of all these symptoms, and of all this derangement, may be *beyond* the stomach or intestines;—they themselves being disposed to be perfectly healthy; or, again, the causes may be in those very organs. In the first place, the cause may be in the groin. A hernia will produce all these symptoms. If a person have a rupture, he is sure to be troubled with irregularity of bowels, costiveness, extreme flatulence, and perhaps gastrodynia and indigestion. If the hernia return into the abdomen, these symptoms may all vanish. Any sort of pressure may have the same effect. Obstruction or costiveness, without any fault in the bowels themselves,—costiveness from persons neglecting to relieve their bowels, or any accidental obstruction whatever,—may produce these symptoms. The presence of worms, or any injurious substances which the patient has taken, may give rise to them;—the stomach and bowels themselves being disposed to perform their functions properly, if these mechanical or accidental circumstances were not forced upon them. Occasionally, these symptoms entirely arise from the individual having taken articles, of which the stomach can make nothing,—which it cannot manage. These ingesta may be altogether improper for any one to take; or the individual may have some particular idiosyncrasy,—peculiarity of constitution (from ιδιος, *peculiar*; συν, *with*; and κρασις, *temperament*). Some persons have a stomach, which can digest things in general very well,—without any inconvenience to them; but there may be one or two things, which their stomach cannot digest; and if these be taken there is dyspepsia, and some intestinal derangement. You can hardly say that such a person is ill; because the circumstance only occurs when he has taken some particular article of food. I once saw a maid-servant who, whenever she took any kind of fruit, experienced dreadful gastrodynia;—the pain running into the back, and causing a rapid pulse, extreme agony, and cold sweats. She could digest hard salt beef, and her general food; but if she took a strawberry or a gooseberry, she was thrown into the state I have described. Of course, an *excessive quantity* of food, will have the

same effect as improper ingesta. Nature not only intends us to eat certain things, and not others, but she also intends us to eat a certain quantity;—and therefore, just as a person may have "*diarrhœa* crapulosa," so they may have "*dyspepsia* crapulosa" (from κραιπυλα, *a surfeit*);—the stomach not being in fault, buthaving more given to it than it ought to have. You will recollect that Solomon says,—"excess of meats bringeth sickness." *

Imperfect mastication is another circumstance, likely to produce disturbance. Nature does not intend lumps of food to go into the stomach. On the contrary, she intends it to be prepared,—to pass through a certain process before it enters the great organ of digestion; and therefore imperfect masticatien will produce dyspepsia, without any fault in the part itself. Old people, when they lose their teeth, or young ones when they cannot chew as before, and cannot live on spoon-victuals, are very subject to indigestion. But,—independently of a particular *quality* of food, or a great *quantity*,—variety, or a great discordancy of meats, will occasionally produce dyspepsia.

Still speaking of causes unconnected with a fault in the stomach and intestines, we may mention "sympathy." These parts are frequently deranged through the state of other organs. In the first place, we may refer to the uterus. When the uterus is pregnant, the alimentary canal is often thrown into disorder. Nausea, vomiting, and strange longings of appetite, will sometimes occur in females, the very next morning after they are impregnated; and sometimes these will occur at the time they quicken. There is every degree of intensity of these affections. You will see them continually in

* "Be not unsatiable in any dainty thing; nor too greedy upon meats. For excess of meats bringeth sickness; and surfeiting will turn into choler. By surfeiting have many perished; but he that taketh heed prolongeth his life."—*Ecclesiasticus* XXXVII, 29—31. "Ecclesiasticus" is an apocryphal book, written in *imitation* of Solomon; and generally attributed to "Jesus, the son of Sirach." The first fifteen verses of the thirty-eighth chapter relate to sickness; and though it has no claims to inspiration, yet from its undoubted antiquity, it is very curious; on account of the notices which it gives of "the physician," and "the apothecary." Express mention is made of "medicines;" and infusions of wood are plainly pointed out. We subjoin the passage:—"Honour the physician with the honour due unto him; for the uses which you may have of him; for the Lord hath created him. For of the Most High cometh healing; and he shall receive honour of the king. The skill of the physician shall lift up his head; and in the sight of great men he shall be in great admiration. The Lord hath created medicines out of the earth; and he that is wise will not abhor them. Was not the water made sweet with wood; that the virtue thereof might be known? And he hath given men skill; that he might be honoured in his marvellous works. With such doth he heal men; and taketh away their pains. Of such doth the apothecary make a confection; and of his works there is no end; and from him is a sweet odour diffused around. My son, in thy sickness be not negligent; but pray unto the Lord, and he will make thee whole. Give a sweet savour; and a memorial of fine flour; and make a fat offering. Then give place to the physician; for the Lord hath created him. Let him not go from thee; for thou hast need of him. There is a time when, in their hands, there is great success. For they shall also pray unto the Lord;—that He would prosper that which they give for ease and remedy,—to prolong life. He that sinneth before his Maker, let him fall into the hands of the physician."

diseases of the kidney; and frequently in mesenteric disease. The passions of the mind, you know, have great effect. If a person have eaten a good dinner, and has a violent emotion of mind,—whether joy or grief, or any other,—he will most probably have a fit of indigestion. Continued depressing passions have the same effect. Many cases of indigestion that I have seen, have been referrible to an uneven state of mind. They have not depended on the stomach; but, some external circumstance has weighed down their spirits; and the stomach has suffered in consequence of it.

The cause, however, may reside in the alimentary canal itself. In the first place, there may be a real debility of the part; in the next place, there may be an inflammatory state; and thirdly, there may be organic disease. As to *debility*, that is sometimes induced by long continued excess in diet and regimen. Persons who have indulged excessively, all their lives, in eating and drinking, may expect to be subject to dyspepsia,—to have their stomach worn out; but this state frequently arises from original debility of the stomach. There can be no doubt that the stomach may be in fault;—like all other parts of the body. You will see this affection run in families, where there has been no excess whatever. You will see the father or the mother and the children labouring under this disease in various degrees;—none having committed any fault calculated to produce it. Certain portions of the stomach may be feeble; or the muscular fibres may become weak;—like muscles in other parts of the body. Some persons will have *one* muscle weak, and some *another*. There may, however, be an *inflammatory* state; and this may be either primary or secondary. It may be induced like any other inflammation; but, in most instances, it is chronic; and it is induced by constant irritation of the stomach. Sometimes it is a mere secondary effect. The stomach has been affected with weakness; till it has fallen into a state of morbid irritability, and ultimately into a state of inflammation. Sometimes, however, you have what is far worse;—*organic* disease of the stomach; and then the indigestion, and all the other symptoms which I mentioned, are irremediable. Generally it is the cardia or the pylorus which is affected; but sometimes (as you will recollect I stated) there may be an ulcer in the body of the stomach; and this ulcer may be either simple or scirrhous. Sometimes there is no ulcer; but the coats of the stomach become thickened or softened. All those circumstances that I spoke of, when treating of organic diseases of the stomach, may occur. You will recollect I mentioned, that the softening of the stomach has sometimes come on suddenly;—has appeared not to have existed above a few weeks, and sometimes not more than a day or two. You will also recollect my mentioning, that this softening was sometimes decidedly inflammatory; and that sometimes there was no mark of inflammation at all;—the parts being perfectly white.

From a consideration of all the causes producing disorder of the digestive organs, you see that occasionally it is quite independent of the stomach and alimentary canal; and you have only to remove

the unfavourable external circumstance, and all goes on right again. Sometimes you will see that the causes are of a nature independent of external circumstances, and are removable; or, if not removable, are in some measure controllable. In other instances, you will see that it is impossible to cure the affection, or even to control it much. The prognosis, therefore, must altogether depend upon what you ascertain to be the cause of the disturbance.

As to the indications in treating this affection, perhaps I may say the first thing to be done, is to alleviate urgent symptoms. Suppose that any thing injurious in its quality or in its quantity is the cause. The shortest way then will be to give an emetic, and empty the stomach; and it is much the best to give one that does not produce nausea, but an evacuation. The sulphate of zinc is as safe as any thing you can exhibit. The flour of mustard has also been exhibited, for the same purpose. But should you find that the patient is of an exceedingly full habit,—for instance, a fat, short-necked, puffy, asthmatic alderman, fifty or sixty years of age,—it may be necessary to take away blood, before you give an emetic; otherwise the exhibition of the latter may cause apoplexy. In some cases, it might be proper to premise bleeding; but in every case it is right to follow up the emetic by purging. Nothing is better than eight or ten grains of calomel, followed up by senna and salts. You thus empty the patient above and below; and he is soon relieved.

If the symptom be gastrodynia, and you cannot find any thing in the stomach that has occasioned it, then you find tincture of opium an excellent remedy. In the continued form of the disease, prussic acid will answer better; but I never saw it succeed when it was given for immediate effect. When you wish that, I think a full dose of opium is best; and laudanum will act rather more quickly than solid opium. You will sometimes find it necessary to give a large dose in this state. Twenty drops have no effect; and you have to give forty, fifty, or sixty, and to repeat the dose every half or three-quarters of an hour; for it produces none of the specific effects of opium. Occasionally, it is better to give the opium in plain, hot water, than in a tincture or brandy; because, after a violent spasm, there is sometimes inflammation. Occasionally, I have seen people labour under inflammation, after spasm has been removed;—not because they took opium, but because they took a quantity of brandy. Sometimes you must repeat a dose of laudanum, containing forty or sixty drops, two or three times, before the good effect is produced.

If the patient labouring under this disease, however, were of full habit, you would find it useful to bleed. Sometimes I have seen gastrodynia cease when the bleeding was over. Venesection is often among the best antispasmodics. After a spasm, tenderness may come on; and then bleeding at the arm, or the application of leeches, may be necessary. But the affection frequently occurs without any marks of an inflammatory state; and then laudanum is sufficient to remove it. Hot external applications are exceedingly useful. The temperature falls in this state; and it is exceedingly pleasant to the

patient to have a hot fomentation, or hot substances of various kinds applied,—not merely upon the stomach, but also to the back. I need not say that a hot-bath, if it can be procured, would be useful. This state is often called "the passage of a gall-stone;"—for no reason whatever, but that it comes on suddenly. You are never justified in saying, that an individual is passing gall-stones, unless he has passed them before, and they have been really found; because a pain of this description may come on in a moment, from eating an article which does not suit that particular individual; or an external circumstance may occasion it; and there is no difference, as regards pain, between it and the passage of a gall-stone.

Suppose the urgent symptoms that require to be removed are heartburn, acidity, and a scalding sensation in the stomach, rising to the throat, I need not say that magnesia, the carbonate of soda, and things of that description, are the best. They will remedy this state chemically in a moment, without a reference to the disease itself. In the healthy stomach, there is muriatic acid. As soon as food is taken, muriatic acid is formed; and, in some persons, it is generated in such great abundance, that it produces this affection. If there be very fœtid eructations, from something putrifying in the stomach, and if the latter be overloaded,—distended with them, it is best to give an emetic. If there be no reason for giving an emetic, two or three drachms of the common solution of the chlorurets might be given; and common acids, also, will answer very well. These, however, are means to be resorted to only when there are symptoms particularly urgent that require removal. We have more to do in order to cure the disease; and we must lay down for the patient a system, for the regulation of his habits and employments.

Having spoken of what ought to be done, in the way of lessening any very urgent symptoms that may arise in disorders of the digestive organs,—particularly in a violent attack of gastrodynia,—we will now consider what is to be done for the cure of the disease;—what is to be done in the way of a regular plan for the termination, or alleviation, of the complaint. In the first place, we must ascertain the cause of the disease; and if it be external to the stomach, we must proceed accordingly. In females, this disorder very frequently arises from the state of the uterus. In pregnancy, it is very common for the stomach to fall into such a state of disorder, that the patient's life, for a time, is rendered miserable; and occasionally, from the constant vomiting,—from the inability to retain any food whatever on the stomach, life has really been brought into danger. In very extreme cases, it has been judged right even to induce premature labour, for the purpose of putting a stop to this great disorder. In ordinary cases, however, although we cannot cure the nausea and vomiting, much may generally be done to alleviate them;—not by removing the pregnancy of the womb, but by lessening the irritability of the stomach, so as to make it sympathize with the uterus as little as possible. Simple bleeding at the arm, has frequently been sufficient for this purpose; and so has the frequent application

of leeches to the epigastrium. All those medicines which I shall hereafter mention, when speaking of another head of treatment, as calculated to lessen the morbid irritability of the stomach, will here be proper;—such as strychnine, conium, and prussic acid. It is also proper that the patient should take but a small quantity of food at a time. But I will speak more particularly of this presently.

If we can ascertain that the disease (as is not uncommon) proceeds from a hernia, the application of the taxis may be the only means of curing the dyspepsia. If you discover that there are worms, the remedies necessary to destroy them will be proper. These remedies I will consider hereafter.

Very frequently, the stomach is not in fault; but there is a sluggishness of the intestines; and as the cause is situated there, a regular course of purgative medicine will be found absolutely necessary. It is wrong to give *strong* purgatives. Those which open the bowels regularly, are best adapted for the purpose. It is astonishing how long things, which are taken into the stomach and intestines, will remain quiet; and then give rise to various symptoms. I believe I alluded to the circumstance before. In the "Philadelphia Journal," for 1822, there is an account of a coagulum of milk, which was vomited two months after it had been taken. I have myself seen a coagulum of milk, like bird-lime; which had remained some days (even a week) in the patient's stomach, and produced the greatest uneasiness,—the stomach not being in fault, but being oppressed by this particular substance. I believe I mentioned that Dr. Barlow, of Bath, published, a case not long ago; in which pills of sulphate of iron were discharged *per anum*, a year after they had been taken. I have seen a piece of salmon vomited by an infant, a month after the nurse had been so foolish as to give the child that food. In a foreign journal, a case is mentioned, similar to that of Dr. Barlow's;—a case in which pills were vomited, a year after they were taken. An instance is recorded, in which a blacksmith's son bolted thirty grapes. He did not *masticate*, but swallowed them *whole*; and, after three months' frequent vomiting and extreme suffering, he was cured by an active purgative medicine. Ten of the grapes came away whole, even then. You will find a case mentioned by Bartholini, where a coagulum of milk, as large as a man's tongue, was discharged after the patient had taken muriatic acid. The same author also mentions a case, where a patient had swallowed a swine's tooth. He suffered under hypochondriasis and extreme emaciation, for two years; the tooth was then discharged *per anum*; and the individual perfectly recovered. You therefore see that, occasionally, you may have disorder of the digestive organs from articles which have been taken, and have remained in the stomach and intestines a much longer time than you could imagine. If, in a case of disorder of the digestive organs, you suspect any thing of this kind, you ought to employ strong remedies. Purgatives and injections, of course, are very important. But whether this be the cause of the disease or not, you will find it of the highest importance to keep the bowels

regular. Nothing can be worse than to give strong purgatives for this purpose; except where there is something considerable to be brought away. In a case of habitual costiveness, strong purgatives, are decidedly bad; because, when you have once acted violently on the intestines, the latter, according to the laws of nature, must fall into a torpid state,—go to sleep. During this condition of repose, the fæces accumulate again; so that you have to give another strong dose, in order to remedy the mischief of the first. Thus the person is always costive or taking strong medicines; the consequence of which is, that he is at last obliged to take them, or he will fall into a state of dyspepsia. One of the best remedies for this state, is a very minute quantity of croton oil (about the twelfth, the sixth, the fourth, or the third of a drop) given regularly with rhubarb or colocynth; and if it should gripe, a small quantity of some aromatic oil may be added to it. You may order one, two, or three drops to be made up into pills; and make the patient take one every night. You will soon find that it will produce one copious stool in the morning; and you also find that the medicine may be taken for two or three years, perhaps for ever, without losing its effect. The patient will not be under the necessity of increasing the dose. If, however, you give it violently, the patient will be in the same condition as if he had taken other purgatives;—he will be costive afterwards. Nothing can be more absurd than to give blue pill, calomel, and mercurial medicines; because they have a two-fold operation. They not merely act as cathartics, but they also pervade the whole system; and thus make the patient weak and nervous. These medicines do more than you want. You merely require the intestines to be acted upon; and not the intestines at large to be put under the specific action of mercury. If Mr. Abernethy had lived a hundred years, and done good all the time, he would not have atoned for the mischief he has done, by making people take blue pill. Half the people in England have been led to fancy, that they cannot live without blue pill; which not only does no more good than any other purgative, but likewise renders those who take it constantly susceptible to cold; and must altogether be very injurious.

I may here mention, that there are some persons who have naturally very torpid bowels;—to whom it is not natural to have a motion every day. I presume that, in ninety-nine cases out of a hundred, it is natural for the bowels to be emptied once in the twenty-four hours; but there are some who do not have a motion oftener than once in three or four days; and they are ill if they do. I have met with such cases. Dr. Heberden knew a person who, all his life, had but one motion a month. As a contrast to this, Dr. Heberden mentions another individual, who had twelve motions a day, for thirty years. That must have been a very troublesome state of things;—a kind of "perpetual motion." This same individual had, after this period, a motion seven times a day, for seven years. Women are much more costive, and suffer this with more impunity, than men; on account of the pelvis being large, and the rectum dis-

tending. Nothing is more common than for women to tell you, that they have been a week, or ten days, without a motion. You must therefore take into account, that it may be natural for some individuals to have a motion only every few days.

In a case of disorder of the digestive organs, you should always examine into the state of other parts of the body; for this condition will take place, from sympathy, not only with the uterus, but with other organs. A very common cause of this disease, is disorder of the brain;—what is commonly called "disorder of the *mind*." From anxiety, grief, and distress of mind, many persons have complaints of the stomach. So far as the stomach itself is concerned, they have no reason to find fault; but from the state of the mind, the stomach cannot do its duty. Excessive anxiety, or grief, will not only take away the appetite, but will produce constant imperfection in the functions of the stomach; together with all those symptoms of indigestion, and derangement of the digestive organs, which I formerly mentioned. I have very frequently been unable to do any material good, because the complaint evidently depended upon the state of the mind; and very frequently I have gained credit where I deserved none, simply from the circumstance of the unhappy state of mind ceasing. I have very frequently attended young ladies, who could not digest;—who had flatulence of the stomach; *no* appetite or *great* appetite; every thing wrong;—simply because there was an anxiety respecting love-affairs. They were in fear of disappointment; and as soon as the affair was settled, they ate, drank, and digested like other people;—without any inconvenience; but, on the contrary, with great benefit. I have frequently been baffled in what appeared good rational treatment, because there was some grief of mind, or some constant anxiety.

It is always right to look out for any particular habit;—to see whether the patient is in the habit of doing any thing, to which you can attribute the disease. Dr. Cullen mentions two cases of dyspepsia, from patients taking snuff before dinner. In one of these two cases, the disorder of the stomach was gastrodynia,—aching pain of the stomach; and in the other case, there was a complete loss of appetite. Now both these individuals, on being particular not to take snuff before dinner,—taking as much as they chose when the stomach had something in it, recovered from their dyspepsia. The one lost his gastrodynia entirely; and the other recovered his appetite. With regard to myself and tobacco, if I smoke three cigars in a day, or smoke three or four successive days, I invariably have dyspepsia. Although I have the best stomach in the world,—one that will digest any thing in the shape of proper, good, nourishing food, yet if I smoke in that way, it invariably produces the most extreme gastrodynia and cardialgia,—so as to make me quite miserable; and therefore I am compelled to be temperate in that respect. You will find that many persons have this disease, from going too long without food. Habit has a great deal to do here. Some persons who breakfast at nine in the morning, and dine at

seven in the evening,—taking nothing in the meantime, feel no inconvenience; and others suffer the *greatest* inconvenience, if they fast more than four or five hours. You will find that habit will not operate on some people, with regard to this point;—that some persons cannot be brought to fast long; and it is vain for them to attempt it. They feel a sinking in the stomach;—they have gastrodynia induced, if they do not eat frequently. Some cannot pass above four hours without food; and in proportion to the labour undergone, is the necessity of eating. In making inquiry into dyspeptic cases, therefore, you should ascertain how frequently the patients eat; but you should also ascertain whether they eat too much; for the stomach must not be blamed, because it does not do double or treble the duty that nature intended. It is said that, in the reign of Henry the Sixth, the people ate but twice a day; "whereas," says Hollinshed, "we have breakfast in the ferenoon, breakfast after dinner, and rare suppers when it is time to go to rest. Now these additional repasts are very well left out; and each one should content himself with dinner and supper only." Another point is to ascertain whether the patient masticates his food. Many persons gobble up their dinner, as a hog would do, instead of masticating it properly. Another point is to ascertain what is the person's diet, and to regulate it for him. You know that some nations live on fish; others on putrid animal matter; and others on vegetables. An eagle has been brought to eat bread, and a pigion to eat meat;—the former being a bird of *prey*, and the latter a *domestic* bird. John Hunter brought a hawk to live on bread. If these changes be accomplished slowly, they may be well borne; but many cases of indigestion arise from persons suddenly changing their diet. It is mentioned that our countrymen who were prisoners under Tippoo Saib, were fed during their confinement upon nothing but rice, water, and capsicums; and on their return, when they were liberated, they of course ate as before. The effect of the suddenness of the change, even to their former diet of meat, was such, that violent diarrhœa was induced. Very frequently you find persons suffer, in this respect, from a change of food; and even from a change of place;—from having different bread from what they have been accustomed to, and different water from that which they formerly had. We see the effect of habit, every day; for the lower orders, without appearing to suffer from it, will eat such butcher's meat, and such fish, as would disorder the stomach of their superiors.

There can be no doubt that, generally speaking, food is best composed of a mixture of vegetable and animal substances. It appears from the teeth, and likewise from the experiments made with the solvent juice of the stomach, that digestion is most likely to take place with facility, and in perfection, if the diet consist of a portion of animal and vegetable substances. In general, too, the food is much better digested, if a certain degree of art be applied in its preparation, — the art of cookery. Some persons, with weak stomachs, require this art in full perfection. They do not disgest

things, unless they are thoroughly boiled,—thoroughly pervaded by heat,—either *dry* heat, or heat and *moisture*; and even then they require the addition of good spices. With regard to patients labouring under this affection, therefore, it is necessary to ascertain whether they have made any change,—whether the meat they eat is good of the kind;—to ascertain, also, whether they eat a proper proportion of animal and vegetable food; and to ascertain that they do not eat things raw, which might be dressed. Many persons for example, have indigestion only when they eat articles not thoroughly cooked; and some persons digest every thing, except raw vegetables, salad, and radishes.

In general, brown and old flesh is better digested than young meat. Mutton is easier of digestion, for example, than veal; and capon than a young chicken. In general, meat that is not particularly fat, is better digested than when it is; and lean is better digested than fat itself. Fresh meat, too, is usually better digested than salt meat. Salt hardens the fibre, makes it more compact, and less easy of solution. Dr. Robinson addicted himself to taking a vomit every evening; and he found that he brought up veal undigested; but when he dined on beef, very little remained;—shewing that the latter is of more easy digestion than the former;—*old* flesh than *young*. With regard to *fat*, it is a curious circumstance that some persons who can digest but few things well, can digest a piece of broiled bacon thoroughly; and it is now the fashion to take broiled bacon, as a thing very easy of digestion. Mr. Cunningham, a surgeon, who wrote an account of New South Wales, states that he knew a person, in whom the smallest portion of the fat of beef or mutton deranged the stomach; and she was forced, before she could take gravy, to allow it to get cold, and then have it skimmed, and warmed again;—so that not a particle of fat remained in it. Yet she could eat broiled fat bacon with impunity.

Another point to be attended to is, not to take much liquid food into the stomach;—not to indulge in broths and slops; which are so much animal matter, with water into the bargain. It is better to take animal food in a compact form, than in a quantity of hot water; because, no doubt, this quantity of liquid is injurious to the stomach. It dilutes the gastric juice; and (we must suppose) relaxes the stomach. It must both sodden it, and diminish its powers. Were there no other reason than that which I have just assigned, it would be wrong to drink too much liquid of any sort, even beer, and tea. One of the best things to drink after dinner, is a cup of very strong coffee, without any milk. Some persons, however, are so stimulated by this, that they cannot bear it. But, in general, it is a good rule for dyspeptic people to limit their quantity of drink as much as possible; to take no slops or broth; and, in preference to drinking beer or water, to take a cup of strong coffee. With regard to vegetables, waxy potatoes are seldom well digested; and it is necessary that greens should be thoroughly boiled;—that is to say, boiled in a large quantity of water, and boiled very vigorously.

You will find many persons much better without beer or wine; but some have a stomach so languid, that it requires the stimulus of wine. You cannot prescribe any particular wine. For some persons, Port is best; for others, Sherry; and for others, again, Madeira. With some people, Port turns acid, and with others Sherry; but, in a great number of cases, you find that Sherry agrees best with the stomach. A mixture of wine is bad; and persons will frequently bear Port, Sherry, or Madeira alone, when they would be made ill by taking any two of them together. But some add beer to a mixture of wines; and then you may expect a treble commotion in the stomach. Some say, that if they take a glass of brandy, it settles all;—it is like oil poured on the sea in a swell. But you find that many persons have stomachs so susceptible, that no wine can be drunk; and, indeed, nothing but brandy-and-water can he borne. As to Champagne, Burgundy, and home-made wines, they are sweet; and generally disagree with the stomach. Still you will meet with exceptions; and you will find cases where vomiting is stopped by Champagne. All Rhenish wines are sour, and likewise Claret; and these usually ferment in the stomach, and become acid; and therefore they are improper. Generally one wine only should be taken; and that which usually answers best is Sherry.

It is well to prevent persons labouring under this complaint from eating suppers; unless they have had an early dinner. If people dine at one or two o'clock, it is necessary for them to take something in the evening. Now and then, you will meet with persons who are not so well without a good supper. They will lie awake from irritability brought on by exhaustion, unless they eat suppers; and therefore there is no rule for these things. There are general rules, —such as I have now mentioned; but you must never stand up for them universally. You must make exceptions; and adopt what you find the patient's constitution requires.

You will find it very proper to advise some persons to eat brown bread, instead of white. Many persons will not be costive, if they eat brown bread; but, in others, it produces a degree of heartburn, and acidity. It is almost always right to advise persons to remain quiet after dinner; for if there be much moving about, digestion does not go on so well. It is a common saying,—

"After dinner sit awhile!"

and it is also said,—

"After supper ride a mile!"

This is not to digest the supper; but because the person should eat so light a supper, that he may ride a mile afterwards, without doing himself any injury.

You thus perceive that much may be done, in the way of curing disease of the digestive organs, without any medicine at all;—simply by discovering the cause, and removing it; and this cause is very frequently some bad habit. It is absurd, in every case of affection

of the stomach, immediately to order something. You should sit down, and learn the history of the case;—ascertain if the cause is beyond the stomach; if it has its seat in any other organ; what is the state of the intestines; what is the condition of the mind; whether the patient has been fasting too long, or eating too much, or taking something that disagrees with him. If it arise from any of these causes, you may cure the disease without any medicine;—may put the patient in possession of a plan, which will put a stop to his ailments. I am quite sure that, in the greater number of cases of indigestion, the disturbance arises from things forced into the stomach, from the state of the mind, or from some injurious habit which the patient has contracted; but it is necessary to attend to all the points I have mentioned, with regard to diet; for some persons have such weak stomachs, that they require a particular line of conduct. Articles which produce indigestion in some people, will not give rise to it in others.

We may perhaps, however, have to treat disease of the stomach itself. Independently of all external circumstances,—of things external to the stomach, the stomach itself may be in fault. Having cleared the way so far, we should look out for inflammation,—ascertain if there be gastritis. If you find a great sensation of heat in the stomach, and up the throat, and if you find the part tender on pressure, you must treat the case as you would any other inflammation. Leeches frequently applied to the pit of the stomach, moderate purging, and mild diet, are the suitable means. If we find no such marks of inflammation;—if the stomach suffers pain when food is taken, although there is no pain on pressure; or if the stomach vomits,—discharges its contents, and yet there is no pain or heat;—we may conclude that the case is one of morbid irritability; and for the purpose of lessening this, you will find that prussic acid is one of the best remedies. In gastrodynia, it answers exceedingly well. If there be inflammation united with this spasmodic pain, you must remedy that by leeches; but if there be merely spasmodic pain, or a constant aching at the stomach, you will often find prussic acid answer very well. It is best to begin with one minim three times a day;—taking care not to give it on an empty stomach; for a dose that will be borne very well when the stomach is *full*, cannot be borne when it is *empty*. All agents affect the stomach most when it is empty;—when they come in contact with it;—when they are not mixed with its contents, and consequently not diluted, and only applied partially to the organ. If you give some doses before meals, and others after it, it will not produce a uniformity of effect. It is best to equalize the dose, by giving it after meals. You may begin with a minim; and, in a day or two, increase it to two minims, then to three, and so on. The symptoms of an unpleasant kind which it produces, and which are sufficient to make you limit the dose, are sickness, faintness, convulsions, and a little pain in the head. You must tell the patient of these things, and guard him against their occurrence;—desiring him, if they take place, to diminish his dose

of medicine immediately;—not to take so large a quantity again, but a smaller dose. Then, as to the dose, there is no rule whatever. I believe I mentioned having had a patient, who could not bear more than the fourteenth or seventeenth of a drop without uneasiness; and I had another who said he took seventeen minims, three times a day; but he could not get beyond that. I have several times seen patients, who took eight or nine minims three times a day; and even that is a large quantity. The dose that is usually borne, varies from two to four minims.

Hyoscyamus, conium, and strychnine, are given for the same purpose; but stramonium and opium, I think, are better than any of these. I think stramonium is the best; because opium confines the bowels; and that is injurious in these cases. I have seen stramonium cure this pain in the stomach (gastrodynia). There is no rule for the dose of this medicine; but it is well to begin with half a grain, two or three times a day; and gradually to increase it, while there are no unpleasant effects. These effects are pain of the head, convulsions, and giddiness; and if the remedy be given incautiously after these begin, you may have drowsiness, violent pain, violent throbbing of the temporal and carotid arteries, and sometimes thirst, and great dimness of sight. If the two latter symptoms are not considerable, the patient may bear them; but if convulsions, giddiness, and pain of the head be induced, it is well to omit the remedy immediately; and then to give a smaller quantity.

Next to stramonium, conium answers very well; but very frequently it requires to be given in increased doses,—up to ten, fifteen, or twenty grains, three times a day. Opium is also proper in these cases, if the patient's bowels are relaxed, and you are anxious for the medicine to have a double effect. With regard to the feeling of morbid irritability, that is much better put a stop to by prussic acid, than by stramonium. I have frequently seen it stopped by the first or second dose; but I think that the gastrodynia,—the aching of the stomach, is best relieved by stramonium. Prussic acid answers very well; but I have seen it fail, where stramonium cured the case with facility. The subnitrate of bismuth * has been used to lessen gastrodynia; and, no doubt, with good effect. The Unguentum Antimonii Tartarizati † has also been employed. It is well, in these cases, to give but a small quantity of food at a time; for the stomach, when much distended, falls at length into a spasmodic state. The more distended the stomach is, the greater effort does it make to contract, and the greater is the spasm; and therefore a small quantity of food is proper.

As to the symptoms of morbid irritability of the stomach, you have carefully to remember, that it may be united with gastrodynia; and you must remember that the morbid irritability may, at different times, amount to inflammation; so that the remedies which, in the

* Now the *Bismuthi Trisnitras.*

† Admitted into the "London Pharmacopœia" of 1836, under the title of *Unguentum Antimonii Potassio-Tartratis.*

first place, were calculated to relieve it, will no longer do so; and the remedies for inflammation must be employed. You are never certain, from day to day, whether the symptoms depend upon inflammation or morbid irritability. Occasionally you have to apply leeches, and the remedies proper for inflammation; at other times, those that I have now mentioned; and frequently you have to employ both; for there may be a degree of tenderness;—but more *pain* than *tenderness*;—so as to render both plans proper. Frequently prussic acid and conium are improper;—the remedies for inflammation being required. In other cases, the remedies for inflammation are improper;—the patient requiring narcotics; and, again, you have other cases, where *both* plans are proper.

You may have another condition of the stomach;—where there is no gastritis,—no inflammation,—no morbid irritability independent of inflammation; but where the stomach is *torpid*. You will have some patients with what is called "a *cold* stomach. They can digest their food, if they take brandy and cayenne pepper. Now in indolence of the stomach, aromatics are generally good;—mustard and cayenne pepper; and, with regard to medicines, ether, camphor, fetid substances, and ammonia, will be found useful. Dr. Baillie says that where, in disorder of the stomach, a quantity of viscid mucus is discharged, the compound tincture of benzoin is an excellent remedy; but where there is pain on pressure, I would not give such a stimulating medicine.

In disorders of the stomach, it would be absurd always to tell patients to abstain from wine, and to take nothing rich; for you find some persons who digest better if they take a few spiced articles, and a few glasses of wine,—perhaps even a pint. Some must have wine, and even spirits. In some cases of this description, the application of galvanism to the epigastrium has been found very serviceable. In this weakness and torpidity of the bowels, tonics, of various kinds, are useful;—especially iron; and particularly Ferrum Ammoniatum,* which is one of the most stimulating preparations of iron. Bitters are useful; and to these, people often add soda; which is a good stimulant. Acids, as well as tonics, have been found useful; and they are often the best remedy for acidity; for they destroy that state of the stomach which gives rise to it. Nothing can be worse, in these cases, than for people to vomit and purge themselves, as they frequently do. It must weaken the alimentary canal. It is right to enjoy plenty of fresh air. Patients ought to avoid confinement. They should have exercise short of fatigue; and should have a pleasureable occupation. It should be constant occupation without care.

WORMS.

It has been said that nature has provided every animal with other animals to prey upon it;—to make a habitation of it, and derive food from it. It is even said that a flea has its flea; and if so, I

* Now the *Ferri Ammonio-Chloridum*.

suppose, the latter would have its flea's flea. How far this matter goes, it is impossible for me to say. Some of these animals evidently come from without. and perhaps exist but temporarily; and these are called "*ectozoa*" (from ξωα, *animals*; and εκτος, *without*, or *outside*); whereas those that colonize, establish themselves, breed a posterity, and become whole families at last, are termed *en*tozoa, (from ξωα, *animals*; and εντος, *within*).

As instances of the *ec*tozoa (those which reside upon the skin) I may mention fleas, lice, bugs, and other delicate little animals. But we have also others which reside *within*; some getting into the anus, some into the maxillary sinuses, some into the stomach and intestines, some into the biliary ducts, and some into the cellular membrane beneath the skin. I had a patient (an infant) who discharged about a dozen larvæ (maggots) of the common fly, all alive. The child had suffered from a chronic cough; but as soon as these dozen larvæ were discharged from the intestines, it lost its cough. I saw them myself in the napkin,—moving about in the fæces;—exactly as you might have seen them, if they had never been in the body. I understood that it had eaten part of a high pheasant, some months before. I have had two cases, in which a live caterpillar was discharged from the intestines. One of these cases occurred in a woman, who was in the habit of eating cabbage-stalks, when she washed them for dinner. The moth lays its eggs on cabbage stalks; and no doubt this patient had swallowed some of the eggs; and it so happened that one of them was hatched. Dr. Good, in his work on Medicine, gives an instance of a flesh-fly (the *musca cibaria*), or rather the larva of it, being discharged by means of purgatives, after producing considerable derangement. The larva of the bee, and even live spiders, have been discharged downwards, from the alimentary canal, by human beings. Even the *triton palustris* and the *lacerta aquatica* (the *domestic* and the *horse*-leech) have been discharged by vomiting, and have been found in the stomach. Leeches, when they get into the stomach, will sometimes (from sucking the blood) attain so large a size as scarcely to be recognized. When soldiers have been encamped on marshy ground, it has been found dangerous for them to go to sleep; lest leeches should get into their mouths, and destroy them. Life has been lost from leeches crawling down the œsophagus into the stomach, sucking blood there, and producing fatal hæmorrhage. I once saw two centipedes, said to have been vomited by a girl twelve years of age. There was no reason to suppose that any deception was practised. She vomited them; and the vomiting was attended by a tightness in the throat. The animals had lived three days when I saw them. The mother said, two months previously, the girl had vomited a black-beetle. She had palpitation of the heart, pain, and heaviness of the head. Dr. Duncan, in the ninth volume of his "Medical Commentaries," mentions the case of a boy, who discharged four caterpillars after a dose of calomel. It is said that several crawled out at the anus afterwards; and on exhibiting calomel and jalap, an incredible number came away. I

should not have paid much attention to these accounts, if I had not myself witnessed similar effects. The boy mentioned by Dr. Duncan, likewise discharged a lumbricus. I have no doubt that some persons are the sport of these insects; while in other persons they would die. It was ascertained, in Dr. Duncan's case, that the boy had frequently gone into the garden, and eaten a young cabbage-leaf;—just as I ascertained that the woman ate the stalks of cabbage, when preparing the latter for dinner. In "Hufeland's Journal," for 1822, there is an instance of live and dead slugs being discharged by vomiting and purging. I recollect a case mentioned in the "Medical Gazette," by Dr. Alderson, of Hull, of a centipes being discharged from the stomach;—exactly as occurred in the case that I saw. You know that horses have what are called *bots* in the stomach, if they swallow the eggs of the common gad-fly. The gad-fly, at a certain period of the year, lays its eggs upon their coat; they lick their coat, and swallow the eggs, which attach themselves to the splenic portion of the stomach. I suppose all this is natural; for I believe they are often found in the stomach of horses. Nature appears to have destined this place for their reception. When they are mature, they escape through the intestines, and become gad-flies. Those animals which evidently come from without, are all called "ectozoa."

You will hear numerous instances of severe headaches having arisen from insects getting into the nostrils, and crawling into the frontal sinuses; and also from their getting into the meatus auditorius. Nothing is more tormenting, I understand, than "a flea in the ear." If it get into the ear, it buzzes about, and makes as much disturbance as a giant would; but this state may be cured in a moment. I recollect the case of a patient of my own, who had been in the greatest agony from this circumstance; but on pouring a teaspoonful of oil into the ear, the flea was quiet in a moment. I suppose it was suffocated. There is a kind of gad-fly which settles in the rectum; and it is therefore called *œstrus hæmorrhoidalus*. It has been found to make its way even into the womb. There is one kind called *œstrus ovis*;—from its always selecting sheep. The guinea-worm comes from without, perforates the skin, lies for a considerable period in the cellular membrane under the skin, and is the source of very troublesome ulcers.

As to those animals which settle regularly in the human body, colonize, and descend from one generation of human beings to another, they are found both in cavities and in the substance of the body; and each of these "entozoa" has its particular habitation. The one called *lumbricus*, always occupies the intestines or stomach; the one called *strongyle*, particularly fixes on the uterine organs; the one called *fluke*, is found in the liver; and the *filaria*, or *guinea-worm*, is found in the cellular membrane. There are three principal forms of these animals, found in the living body. Those of one set are *round*,—in cylinders or spindles; those of another set are *flattened*, like bobbin; and those of the third set are *globular* or *vesicular*. It is the latter that are chiefly found in the substance of organs.

Linnæus arranged them according to their *situation*;—accordingly as they were found in the intestines, or in other viscera. Rudolphi (the naturalist) of Berlin, names them from their form; and arranges them into five classes. The first of these he terms *Nematoidea* (from *νημα, a thread*; and *ειδος, form*). He has a *second* class, which he calls *Acanthocephala* (from *ακανθα, a prickle*; and *κεφαλη, the head*). These are animals which are of the hydatid-kind. They have no spinal canal; but have distinct genital organs. There are two sexes; and they are found only, or chiefly, in the intestines of swine. Then he has a *third* class; which is called *Trematoda* (from *τρημα, an aperture*; and *ειδος, form*). These are flat, with minute pores. It is said that these have no intestinal canal; but distinct genital organs. Then the *fourth* is *Cestoidea*, (from *κεστος, a girdle*; and *ειδος, form*); which include the different kinds of the *tænia*, or "flat worm;" and the fifth he calls *Cystica* (from *κυστις, a bladder*; and *ειδος, form*). These are *hyatids*.*

Cuvier makes more simple classes than these. He arranges, in separate classes, those which have a distinct digestive cavity, and those which have *no* distinct digestive cavity to be traced in the interior. Those of the first are called *Cavitaires*; because they have a digestive cavity;—its regular canals and an anus; and those of the other are called *Parenchymateux*; because they have nothing but a uniform structure, with no regular digestive tubes. This last class embraces all the classes of Rudolphi except the first; and those which have a regular digestive apparatus comprehend the round worm, the little ascarides, the strongyle, and the guinea-worm; and therefore, instead of the *five* kinds of Rudolphi, Cuvier makes but *four*.

I will now begin with the *Cavitaires*; or, according to Rudolphi, the *Nematoidea*. The first of these was formerly termed *Lumbricus*; but it is now termed *Ascaris Lumbricoides*. This worm has external integuments. It has also muscles, a *digestive* apparatus, and a *genital* apparatus; and some have thought that it has a circulating and a nervous system. The muscles of this worm lie immediately under the skin. The fibres are two-fold;—both long and transverse. The digestive organs are quite straight. It has a triangular mouth, with three tubercles; the anus is at the opposite end; and the genitals fill a great part of the animal. Each sex is a different individual; and the opening of the genitals is near the anus. You will find it from twelve to fifteen inches in length; it is of a yellow colour; and as many as eighty of them have been discharged from one individual. The celebrated Professor Frank mentions a case, in which the intestines were absolutely crammed with them. This worm is usually found in the small intestines. Occasionally it is found in the *large* ones, in the stomach, the œsophagus, the pharynx, and the mouth;—for I have known a person vomit one; but its proper habitation appears to be the small intestines. Andral says that he found a lumbricus in the pharynx. It got out of the small intestines into the

* Dr. Fletcher's very useful table of these Worms, will be found at page 195.

stomach; from the stomach into the pharynx; and then one end turned down into the larynx, and there caused sudden death by suffocating the patient. Andral also saw several in the liver; having apparently crept up the ductus communis choledochus to the duodenum. Dr. Baron, of Gloucester, mentions having seen a lumbricus in the ducts of the liver; and an old physician, who wrote on Morbid Anatomy, mentions having seen several worms in that situation. Andral says that he saw a liver absolutely perforated with them; and sometimes they have perforated the intestines, and got into the peritoneum. They have sometimes been known to escape externally through the integuments; or into the urinary bladder, or into the vagina. You will observe the resemblance of this animal to the earth-worm; but the earth-worm is found to be less pointed; its mouth is only a small slit at the under part of a rounded head; and the anus is not *near* the extremity, but at the *very* extremity. The earth-worm is more fleshy, and more marked with rugæ; and it has one most distinguishing circumstance,—a quadrangular row of processes, like feet; which it can erect and move about. It has also three longitudinal lines at the upper surface; and it is an hermaphrodite. The Ascaris Lumbricoides is by far most common in children; and is rarer as people grow old.

The next worm, in point of size, is that formerly called *Trichuris* (from θριξ, *a hair*; and ουρα, *the tail*); sometimes improperly termed "the *three*-tailed worm." Unluckily our predecessors mistook the *head* for the *tail*, and it is now called *Trichocephalus* (from θριξ, *a hair*; and κεφαλη, *the head*). It is a very small worm;—about one inch and a half, or two inches, in length. It is of a violet colour; and the anterior end is much finer than the posterior;—it becomes a mere point for the mouth. The posterior end of the male is bent; and it has a straight alimentary canal, around which are placed the organs of generation. This worm is found lower down in the alimentary canal than the last; for it occurs chiefly in the cæcum. There are generally several of them. It is much more common in infants, than in others.

Another worm which has also an alimentary canal, is the *Ascaris* (from ασκεω, *to move about*); or, properly speaking, the *Oxyuris* (from οξυς, *sharp*; and ουρα, *tail*), or "drop-tail." This passes with the common people, under the name of "thread-worm." It lives as low down as it possibly can in the rectum, and frequently makes its exit; and when it once gets out, it cannot get back, but shrinks up and perishes. It is far shorter than the others. The male is said to be about a line and a half in length; the female four lines. The organization is the same as in the other two kinds. It is not only usually found in the rectum; but it is generally surrounded by mucus. These worms will crawl out; and patients sometimes amuse themselves by seeing how many they can catch during the night;—in order that they may shew their exploits to the doctor, in the morning. I have known them to crawl out of old persons; so that they have complained that they picked them off their thighs in bed.

Worms of the other description (called *Parenchymateux* by Cuvier) have no digestive or other perceptible organs, except instruments of locomotion. They have various forms; some are *spheroidal*, some *flat*, and some *long*. They are the *Acanthocephala*,—with twopoints the *Trematoda*,—with a perforation; and the *Cestoidea*, including those of which I am now going to speak,—*Tæniæ*. These are found in the substance of the body, and in various cavities. Lastly, there are those which are called *Hydatids* (*Cystica*), and which are very frequently found in the substance of the body, but occasionally in its cavities; and sometimes they have a particular cyst.

I will now proceed to that worm, which we meet with every day in the living subject; and which is called *Tænia* (from ταινια, *a fillet*). This animal is never less than several feet in length; and sometimes many yards. One author mentions a worm of this kind which measured one hundred and fifty feet; and another foreign writer saw one three hundred feet long. Though I never saw one so long as that, yet I have frequently seen seven, eight, or ten yards, come away at once. It is fine in structure, and has a series of articulations,—each with natural pores. Dr. Baillie says, that the last joint has an aperture. The anterior part of the worm is very fine; the head is square; and it has little retractile hooks. There is no regular organization within;—that is to say, there is nothing leading to a digestive tube. It is almost a mere amorphous mass; yet you may feel arborescent vessels about the joints; and a serpentine canal is sometimes seen at the edges. It moves in an undulatory manner. There are two kinds seen;—the one called "Tænia *Solium*" (from "solus," *alone*; because it usually infests the body singly); and the other "Tænia *Lata*" (from "latus," *broad*). That which is called *Tænia Solium* is, towards the head, about the third of a line broad; and has crotchets before and on each side the articulations. On this account, it is sometimes called "armed" *Tænia*. The other, which is called *Tænia Lata*, is shorter and broader; and has no crochets. The latter usually exists in cavities,—three or four in an individual; and from twelve to fifteen feet long. The "Tape-Worm" is far more frequent in adults, than in children, and in the dog than in the human subject; but it is said that in the dog, and in other brutes, it differs somewhat from that observed in the human subject. It is more common in some countries, than in others. In Switzerland, the water is very bad; and the *Tænia Solium* is very common there. The *Tænia Lata* is not so common.

It is probable that a great number of those worms which I have now been speaking of as *entozoa*, really came originally from without. Many persons, on going to particular places, have presently become subject to worms;—just like other people in that particular neighbourhood. Persons who, by accident, have drunk bad water, have frequently had worms from that time. There can be no doubt that Tænia may be continually traced to external sources; and with respect to Ascarides, you will see a remarkable case published in the "Dublin Transactions," Volume II;—a case in which a whole family

was infested with this worm; and every servant who came to the house, after a certain time, had it. Although medicines were taken, yet nothing liberated these persons from it; and at last ascarides (very similar, but a little browner) were discovered in a well, from which the people derived all their water. The family had resided there many years, but they now found it necessary to change their habitation; and, from that time, nearly all of them lost their worms. The race was kept up in one individual; but the greater part of the family lost the worms on ceasing to drink that water. With regard to Tænia, Dr. Darwin mentions that the fens of Lincolnshire are famed for them. Sir John Pringle says, that the Lumbrici are very common in the remittent fevers of marshy countries; and that when they have been once introduced, it is impossible to say how long they may remain. They may continue for many years. It appears to be a fact, that they may be transmitted from generation to generation. A German writer of authority says, that he actually found worms in the intestines of a fœtus. This is not at all surprising; for the germs may be easily transmitted from the mother to the offspring. Lamarck, the French naturalist, has found the same thing. Tænia have been seen in a muddy spring; only they were rather smaller than those observed in human beings. You know that the lower animals are easily altered by particular circumstances; and therefore it is not surprising that ascarides should be of a different colour and size *in* the body, and *out* of it;—in wells and in the living subject. I recollect being told by a friend, who had travelled a great deal in Syria, that he drank some bad water, and was exceedingly ill, for a week or so. He did not know what was the matter with him; when, all at once, after taking a good dose of calomel, he discharged little more than a heap of small maggots. What they were, he was not naturalist enough to inform me; but he got well; and his illness could be traced to this external circumstance. The Tænia may come from without; and so, it would appear, may the Ascarides; and so, in all probability, may the Ascaris Lumbricoides.

Generally speaking, these worms prevail more especially in proportion as the patient is weak. You are aware that persons who are exhausted from fever, will become the subjects of vermin. In extreme debility of the constitution, you may have a patient cleaned several times a day; and be covered with a fresh crop of vermin. So it is, in general, within. The more weakness there is of the body, the more the entozoa thrive. Bad air, bad food, and the want of sun, will contribute to their appearance. I formerly mentioned, that when rabbits are kept in a bad place, they will become subject to Hydatids. Sheep in wet pastures, also, become subject to these animals.

There can be no doubt that children are much more disposed to Ascarides and to Lumbrici, than other persons are; and not only so but, as age advances, the constitution frequently becomes so unfit for the continuance of these worms, that they are absolutely shaken

off without any physic at all. There can be no question,—at least, there is none in my mind,—that children cease to become the prey of worms. Thousands have Ascarides when they are young, and never have them afterwards. This is not so common an occurrence with regard to Lumbrici, as with regard to Ascarides; but the remark is correct there, to a certain extent. The early period of life seems to favour these animals;—why, I do not know; but such is the fact. You will see some of these worms in persons of the highest health. You will see persons with a good colour complaining of worms; and they will be able to verify their assertion.

With regard to the *symptoms*, worms sometimes produce the most distressing effects;—so as to make life a burden. At other times, they produce no symptoms at all; and a person only knows that he has worms, because he discharges them. I have seen many individuals who, to their great astonishment, discharged several feet of Tape-Worm;—not having had the least idea, previously, that there was any thing the matter with them.

In enumerating the symptoms, I will begin with the head, and go downwards;—for the sake of assisting the memory. When worms exist in the alimentary canal, then the symptoms usually are headache, heaviness, giddiness, depression of spirits, and even convulsions. Sometimes the headache is sharp; sometimes it is dull; and frequently there is a stabbing of the temples. Perhaps there is regular epilepsy; and some authors even mention tetanus. There is a black circle around the eyes; paleness of the face; more or less tumidness of the upper lip; great itching of the nose; foulness of the tongue; thirst; offensiveness of the breath; palpitation; shortness of breath; cough; and even hæmoptysis. Then (to go below the diaphragm) we have either anorexia, or excessive appetite; nausea; vomiting; a gnawing pain at the scrobiculus cordis; pain, perhaps all over the abdomen, or in various parts of it; griping; purging; itching of the fundament and of the genitals; a discharge of mucus from the rectum; feverishness; and emaciation. The pain of the abdomen is sometimes a *pricking* pain; and there may be tenderness of it. These are the symptoms which worms produce; but, of course, you do not see all these in every case. On the other hand, worms will exist in the alimentary canal, without giving rise to any symptoms whatever.

As to getting rid of worms, in the first place, any brisk purgative may answer the purpose. A good dose of calomel and jalap is an old remedy, and a very excellent one. Sir John Pringle used to give twelve grains of calomel, and half a drachm of rhubarb. Some give gamboge; but I do not know its specific power. It produces nausea; and is not so good as calomel and jalap.

But besides these remedies for the *expulsion* of worms, we employ others for the purpose of *destruction*; and one of the best is, unquestionably, oil of turpentine. In the case of Ascarides,—which are easily known from their crawling out, from their appearing in the stools, and from the extreme itching which they cause in the rectum,—it is best to give the oil of turpentine by injection. You

thus send it immediately on the parts where the worms reside; you save the patient the unpleasantness of a filthy dose; and you save the stomach from great disturbance. From a drachm to half an ounce, mixed with gruel, may be given to a child, and it will often bring away thousands. Adults will take a larger dose in an injection;—an ounce or more; but perhaps a very large dose is not so well. It causes so much irritation, that it may produce an immediate expulsion. It may not lie long enough to kill the worms; but may be discharged from the intestines. In the case of other worms, the oil of turpentine should be given by the mouth; and the dose is then from half an ounce to three ounces. In females, half an ounce is generally a proper dose to begin with; and it is seldom right to give more than an ounce; but in men, if they be not particularly delicate, it may be right to give two ounces. It is best not to give it fasting; lest it should create sickness, and be lost. Patients had better take it a couple of hours after some meal; and they ought to remain perfectly quiet;—lest vomiting should be induced. It may be taken pure;—in the same way as a glass of spirits; or in gruel, or in any thing else which the patient chooses. The effect it generally produces, is that of making the patient sick, purging him violently, making him giddy, and causing extreme vertigo. These will all go off; but occasionally the medicine will not purge itself away; and, therefore, it is best to give a dose of castor-oil; and to repeat it every hour or two, till the medicine passes freely. It rarely affects the urinary organs; but sometimes it does. Now and then you will have bloody urine, a frequent desire to make water, and great pain; but, in general, these effects do not occur; and when they do, there is usually an idiosyncracy; and they will occur from the smallest doses. Large doses usually work themselves off; but where they do not, I have seen these effects. Where the remedy does not produce irritation, it has been absorbed; and the urine has smelt strongly of it, for several days. I conclude that, where it produces violent symptoms, there is a little idiosyncracy.

The history of our knowledge of this medicine, is rather curious. So far as I have read, it appears that its use, in the cure of worms, was first mentioned in 1792, by a general practitioner, at Putney, of the name of Madden. A man had been long accustomed to pass Tape-Worm; and a friend advised him to take oil of turpentine. He took two drachms; and, to his great astonishment, discharged five yards of Tape-Worm, and several pieces afterwards. At the time Mr. Madden wrote, which was three years and a half afterwards, he was quite well. This fact was lost sight of,—not in the least attended to, till a paper was published, in 1811, in the "Medico-Chirurgical Transactions," by a physician at Durham. It gave an account of a sailor, who had been in the habit of taking gin to expel a Tænia; but at last it failed; and he took a glass of oil of turpentine;—thinking that that was stronger. It was quite successful. What is very curious, after this paper was written, some other person, in 1817, published a paper in the "Transactions of the London

Medical Society," in which Mr. Madden's account was contained; and claimed the discovery of the remedy. The circumstance was forgotten; and the Society allowed the second paper to be published. Oil of turpentine is one of the best remedies that we have. It will expel all sorts of worms;—Ascarides, Lumbrici, Tænia, and all the others. Occasionally it will fail; but you should give it in large doses, and take care that it finds its way out. You should follow it up with a dose of castor-oil every two hours; otherwise the patient may be brought into some danger. I have seen a degree of danger produced in a child, from inflammation of the intestines coming on; but it went away in a few hours. The oil of turpentine has been particularly used in the case of Tapeworm in the intestines; but it is equally good in the case of other kinds of worms.

Before concluding the subject of these worms, I should state that we are not quite certain with regard to some of these, whether they deserve the name of "*ec*tozoa" or "*en*tozoa." Those that *reside* within, *breed* within;—entozoa have particular residences. Some invade the alimentary canal generally; and others reside in particular parts of the canal. The same thing has been observed with respect to those which reside on the surface. Whether they have an external origin or not, we are not quite certain. Then, again, there are some vermin (small lice) which live only in the head; and it is said that they will not thrive any where else. There are others which live only on the body; and it is said, that if you put them into the hair of the head, they die. These have been vulgarly named *crab-lice*; but scientifically they are called *pediculi pubis*. They thrive only on the pubes.

I should mention that there is a particular kind of flea,—very large,—a sort of giant,—which passes under the name of *chiggre*. This is found particularly among the negroes, and is a source of great trouble to them; for it is so powerful, that it gets under the skin, and there burrows, and forms a bag, in which it lays its eggs;—the result of which is a very troublesome ulcer. I had a patient at St. Thomas's Hospital, who had lost the nail, and the extremity of each great toe, through chiggres. There was a cicatrix running across the toe; which cicatrix had been occasioned by this animal. The negroes are very expert at taking them out, in whomsoever they occur. The great point is to remove the bag entirely; for if any part remain, an oozing occurs, and no good is done. There is a story told of a person, who was anxious to have it put to the test, whether chiggres were a particular sort of flea, or only a variety of the common kind; and he therefore let one which had got under the skin, go on burrowing; in order that he might observe its increase and habits. The consequence was not only a troublesome ulcer, but mortification. A gentleman, who has been much in the West Indies, is of opinion that that kind of elephantiasis which is called *Barbadoes-Leg*,—in which the skin becomes exceedingly hypertrophied,—and that disease of the scrotum in which the skin and the subjacent cellular membrane are excessively hypertrophied (just such a case as

occurred in the Chinese at Guy's Hospital *), all arise from chiggres, Whether he is right in his opinion, or what grounds he has for it, I will not pretend to say; but he is a man of very careful observation.

The dolichos pruriens (cowhage or "cow-itch") has been used particularly against the Lumbrici; and the best account I can give you of that remedy, is to be found in a work, written some years ago, by a general practitioner of the name of Chamberlain.† The pubes, or small spiculæ of the dolichos, are scraped off, and made into an electuary; and the electuary may be given in almost any quantity. I have found the oil of turpentine so efficacious, that I have not had much recourse to "cow-itch;" but Mr. Chamberlain mentions, that you may give a large quantity of it. A woman, at St. Thomas's Hospital, took a drachm of the pubes of dolichos, twice a day, for five days; and afterwards a purgative was given to her. The proper mode of exhibiting it is in an electuary, made of senna or treacle. As good a mode of exhibiting it as you can adopt, is to thicken it to a proper consistency with treacle; and to let the patient take a teaspoonful of it, two or three times a day. You should occasionally give a purgative. It appears to do no harm. The only inconvenience which my patient experienced, was a tingling in the mouth; but when it had once got into the alimentary canal, no further unpleasant symptom arose. The bark of pomegranate-root has also been particularly recommended. Half a drachm may be given every half hour, till vertigo is produced. You will find a good account of this, in the eleventh volume of the "Medico-Chirurgical Transactions." It has the effect of producing giddiness, sickness, convulsions, pain in the head, and purging. There is no rule for the quantity that will produce this, and therefore it is well to give half a drachm of the powdered bark, in some water, every half hour, till the patient begins to feel sickness, or it purges him. It is for the Tænia that this is particularly recommended; and there can be no doubt at all of its virtue. These are the only things with which I am practically acquainted. Steel-filings have been mentioned; and a woman once took an ounce and a half in a day. They purged off with a cathartic; but without any sensible effect whatever.

You will find, in books on Materia Medica, a number of medicines recommended. The bark and shoots of the "bastard cabbage-tree," and of the fern, have been particularly spoken of as a remedy for Tænia. Indian pink (which is an acrid narcotic) has undoubtedly been useful. You will find a curious case, in the second volume of the "Transactions of the College of Physicians," of a man who took two pounds of common salt, in four pints of water; and, by that

* This refers to Hoo Loo, an unfortunate Chinese; who came over to this country, expressly to have a large tumor removed from the scrotum. The operation was performed at Guy's Hospital; but the patient did not survive. An account of this case will be found in the "Lancet;" (No. 398, Volume II. 1830-1, Page 86). Mr. Liston has, in his Museum, an enormous tumour of this kind, which he removed successfully.

† "Treatise on the Efficacy of Cowhage, in Diseases occasioned by Worms, &c. By William Chamberlain."

means, got rid of an immense number of Ascarides. It is well known that salt is rather a preservative against worms. The flukes which are found in sheep come, it would appear, from stagnant water; and it is said that, by giving the sheep plenty of salt, you may prevent them from becoming the victims of fluke. Electricity has been employed;—the passing of shocks through the abdomen; and now and then a worm has come away. It has been rendered uneasy, and has endeavoured to escape.

But besides those means which are necessary to expel the worms, it is of the highest importance to restore the health. There can be no doubt that worms derange the health; and if you can get rid of them, health will return. But they are frequently present on account of bad health; and therefore, though it is necessary to expel them by common purgatives, (which often answer very well), you must, at the same time, endeavour (by all the means in your power), to restore the health; to take care that the patient has wholesome food, and to put the digestive organs into the best order you can. If this be done, you will frequently find worms disappear, without any other means being employed. Without giving any purgative medicines whatever,—without doing anything to expel or destroy worms, you will find, in a great number of cases where children have become their prey, that they will spontaneously cease. Children are far more subject to Ascarides and Lumbrici than adults; and a great number of children have them at a particular time; but as puberty arrives, the constitution is less favourable as a habitation for worms; and they cease spontaneously. Most of us have been freed from worms spontaneously; although they may have been a great torment to us at the younger period of life.

One kind of worm, as you will recollect I mentioned, is found in the bladder; and this is called the *Strongyle*. Dr. Davis, of this University, once shewed me a phial, containing a large number of them,—all creeping about in full animation,—which came from the bladder of a female. She had discharged a large quantity of them, for a considerable time. Mr. Lawrence has described a curious case of this kind, in one of the volumes of the "Medico-Chirurgical Transactions." In that case, from eight hundred to one thousand of these worms were discharged from the bladder in about a year. Some of these were an inch in length. They were very hard and firm. These worms cause great irritation, a frequent desire to make water, and sometimes bloody urine. In the fifth volume of the "Medical Essays" (which is a very excellent work) there is an instance of one an inch in length, and as broad as the smallest part of a needle. It was discharged, after having produced bloody urine for many years. What could be done in a case of this description, I do not know. Whether turpentine given by the mouth would answer, is doubtful. It would find its way to the urinary organs, because it impregnates the urine; but whether in sufficient quantity to destroy the worm, I do not know. Whether it would be right to inject the bladder, I cannot tell; but first I should try an injection of olive-oil;—just as I should kill a flea in the ear. Whether these worms

are formed in the bladder, or come from the kidneys, I do not know. The point is not yet determined.

These are all the observations that I have to make upon the abdomen,—properly so called. I shall next treat of diseases of the urinary organs;—commencing with "inflammation of the kidney."

NEPHRITIS.

According to the rule which I have hitherto observed, the first disease of which I shall speak among those of the urinary organs, will be *inflammation*; and inflammation of the *kidney*; called *nephritis* (from *νεφρος*, *the kidney*; and "itis,"—*inflammation*). In this disease there is pain in the loins; but it is usually experienced on one side only. On account of the great sympathy that exists between the kidney and the stomach, there is very frequently nausea and vomiting. In inflammation of the *heart* and *lungs*, you do not have vomiting; but in inflammation of the *kidney*, you generally have more or less disturbance of the stomach;—either nausea, or absolute vomiting. From sympathy among different parts of the urinary system, there is usually a frequent desire to make water. The pain is not confined to the loins; but runs along the ureter, towards the bladder. The testicle of that side is generally painful and contracted;—drawn up; and very frequently indeed it is swelled. There is also numbness in the inner part of the thigh;—I presume from an affection of the anterior crural nerve. The pain is seldom felt at the *back* of the *thigh*. It does not run down that part of the limb, like sciatica; but is felt *anteriorly*,—along the course of the ureter, down the testis, and down the inner part of the thigh; where the anterior crural nerve is situated. The testis, indeed, is sometimes not only swelled, but sore to the touch; and sometimes it, as well as the inner part of the thigh, experiences a sensation of numbness. The urine is generally scanty and red;—following the course that is usually observed in any active inflammatory disease; and the kidney being the part affected, it is more scanty, and of a deeper red, in nephritis, than in other inflammations. On the other hand, the urine is sometimes not deficient in quantity; and occasionally it is found to be very pale; but, as a general rule, it is scanty and red.

In a *rheumatic* affection of the loins, the pain is usually felt on both sides; and it is felt to a great extent;—it generally affects a large surface. It runs to the hip; and, if it extend at all, it proceeds down the outer part of the thigh;—taking the course of the sciatic nerve. There is not a frequent desire to make water; there is no pain in the course of the ureter; no enlargement of the testicle; nor any pain in the inside of the thigh. Motion, in that disease, very frequently produces pain;—pain extending perhaps to the thigh, and especially about the joint, and about the trochanter. The large trochanter is not only painful, but perhaps hot and swollen. Very often you have rheumatism in other parts; and, very frequently, there is profuse sweating. The absence of all *urinary* symptoms (if I may so call them), and the situation of the pain,—in addition to

the common symptoms of acute rheumatism,—enable you, in general, to distinguish the disease perfectly. I was able in one instance, to make an accurate diagnosis, where some little difficulty was thrown around the case. There was a man in St. Thomas's Hospital, who had been there, six or eight months previously, for a decided affection of one kidney. There was pain in one part of the back, extending down the ureter; the testis was retracted; and there was an affection of the urine. The case was treated as *nephritis*. But he now came in with what was decided *rheumatism*. There was pain on the outer side, lower down than the kidney. It did not extend in the course of the ureter; but ran down the course of the sciatic nerve, and particularly affected the joint, which was painful on motion;—showing the effect of rheumatism. He did not make water more frequently than he ought; but there was pain in one point anteriorly. That, however, arose from an evident circumstance; it was in the situation of the glands, which were inflamed. He was treated by acupuncture; and making his mouth sore; and he speedily got rid of the disease.

Nephritis more frequently may be produced by cold, like any other inflammation; but it is rarely an idiopathetic disease. It is the result either of mechanical violence, or of some acrid matter which has been taken; such as turpentine or cantharides. Or it is the result of stones existing in it, or of some disposition perhaps to gout. If the disease go on to great violence, suppuration may occur. There is then less pain; rigors may be experienced by the patient; and pus may appear in his urine. The discharge may take place in that direction; or it may present itself at the back;—giving the appearance of a lumbar abscess, perhaps. Sometimes, however, it has been known to open into the intestines. Various terminations have occurred; all of which you may imagine beforehand. The pus has sometimes been collected into an abscess; and sometimes it has appeared in separate portions;—forming so many minute specks, with which the organ has been studded.

As to the *treatment* of the disease, it consists in bleeding at the arm; cupping on the loins,—either alone or after general bleeding; purging, especially by calomel; putting the patient into a warm bath; and low diet. If the kidneys suppurate, it is necessary to treat it as any other suppuration. You must support the strength; tranquillize the patient by anodynes; and perhaps give uva ursi. Some recommend this drug; but whether it has any particular virtue I do not know. The common treatment of suppuration, in any part of the body, is that which is required.

HÆMATURIA.

The kidneys are subject to hæmorrhage; and when blood appears in the urine, the disease is called *hæmaturia* (from αιμα, *blood*; and ουρον, *urine*). Blood may appear in the urine from an affection of the kidneys, or of the ureters, or of the bladder, or of the urethra, or of some other part opening into the kidney. The blood is occa-

sionally diffused through the urine;—you see the urine containing a sediment, which is evidently a mass of blood; and sometimes you see blood discharged without any urine.

If the urine be red in consequence of the presence of blood, I think you may always distinguish it by the eye. It is not of a deep orange-colour; but is of downright red. You may always distinguish it from the most red sediment, produced by feverishness and inflammation. It is a true red;—such as no one, I think, can mistake; but if you have any doubt, you may dip a rag into it; and you will find it stained red;—without any tinge of yellow, or any orange-tint; as is the case in the highest-coloured urine if no blood be present. Frequently blood is discharged so pure, or in such a quantity, that, independently of the colour, you ascertain at once what it is. But you have another point to ascertain. After you have distinguished whether it is blood or not, you have also to find out where it comes from;—whether it comes from the kidney, or some other part. If it come from the urethra, that fact is easily known; because there is evident disease of the urethra. It is common in violent gonorrhœa; it is common in stricture; and also when a bougie is passed. There can be no difficulty, I think, in ascertaining whether the hæmorrhage comes from the urethra; the point most difficult to ascertain is, whether it comes from the *kidney* or from the *bladder*. It is rare for hæmorrhage to take place from the ureter.

I presume the mode of distinguishing between hæmorrhage from the kidney, and that from the bladder, would be by observing where the other symptoms reside;—whether in the loins, or down in the pelvis. Sometimes, I believe, it is impossible to make an accurate diagnosis. I recollect having a case of fungus hæmatodes of the bladder, which was productive of no pain, nor of any irritation whatever. The only symptom the man had, was a discharge of blood from the urinary passages. I could make out no disease at all. He died under the repeated hæmorrhages; and, at the autopsy, a fungus was found shooting from the bladder. But if there be any symptoms besides the bleeding, emaciation, and debility, you will observe whether they are situated in the *loins* or about the *bladder*. If they are in the *loins*, there will be pain there, most likely sickness, and perhaps tenderness in the region of the kidney. If the symptoms are in the *bladder*, you have pain about the pelvis, and a frequent desire to make water;—far more so than in the other case;—there will be far greater irritation. But it is to be remembered, that disease of the bladder and urethra will cause pain in the kidney; and that disease of the kidney will cause irritation about the bladder, as well as the symptoms I have mentioned about the testicle. The latter show how distant the symptoms may be, when the kidney is itself affected. Hence it is to be remembered, that there may sometimes be great difficulty in making out an accurate diagnosis; but generally, the presence of symptoms in the pelvis, rather than the loins; or in the loins rather than the pelvis; or the great intensity signs of nephritis;—pain in the loins, feverishness, quickness of

the symptoms at one spot, rather than at another, — will be the means of removing all difficulty.

With regard to hæmaturia at large, it is sometimes a disease easily cured; or, on the other hand, it may be very dangerous;—all depends upon the cause. It is sometimes inflammatory, and is attended with a quick pulse, a dry tongue, and even retraction of the testicle. It will then give way to the common treatment for nephritis. A bleeding or two, or purging, will generally get rid of it. When it is inflammatory, it is acute; and generally arises from some evident cause,—a "cold," or a blow, or some acrid substances that have been taken. The most common of the latter (and, indeed, the only ones that I ever saw produce it) are turpentine and cantharides. When it has arisen from these, it would be well to take plenty of diluents and demulcent substances. Water, with a quantity of gum in it, and mucilaginous matters in general, should be employed in addition to anti-inflammatory treatment.

Sometimes, however, this hæmorrhage is entirely passive;—not accompanied by any signs of inflammation. It sometimes occurs with typhus fever, sometimes with small-pox, and sometimes with purpura hæmorrhagica. Because it is a symptom of purpura hæmorrhagica, that is no reason why it should not be inflammatory; but it will take place where that disease arises entirely from debility, as well as when it is inflammatory. In these circumstances the treatment for passive hæmorrhage must be adopted; and turpentine will be found very useful;—not in *large*, but in *small* doses;—from twenty to twenty-five drops, every four or six hours. Of course the system requires support; and the common treatment of passive inflammation must be adopted, at the same time that you employ this specific remedy.

When hæmorrhage takes place in chronic disease of the kidney; when you have seen chronic disease previously existing;—when you suspect that there may be calculi in the kidney, or a cancerous affection of the organ, or any other structural disease,—the same treatment must be adopted. You cannot, in general, lower the patient. If there be symptoms of inflammation, you must act accordingly; but, in general, the administration of turpentine in small doses (carefully watching it lest it should irritate the kidneys),—together with the exhibition of opiates to relieve the pain and procure rest, and giving the patient good support,—is all that is needful. The treatment will give you no difficulty at all. You have only to treat it in the same way as you would treat hæmorrhage from other parts. You must consider what is the patient's strength, on the one hand, or his debility, on the other;—you must consider whether there are symptoms of active inflammation, or how far the hæmorrhage appears to be passive only. If the disease be not inflammatory, you will find that oil of turpentine is of as great use here, as in hæmorrhage from the alimentary canal; but it is necessary that you should carefully watch the patient; because that which is *passive* to-day, may, through sudden excitement, be *active* to-morrow.

This hæmorrhage occurs, sometimes, in a curious way. Like other hæmorrhages, it has occurred where the menses have been suspended. I once saw an instance of its occurrence, after hæmoptysis had been cured. Occasionally it will take place in men, and also in women; but more frequently in men who have been subject to a discharge of blood from the hæmorrhoidal vessels. When that discharge is stopped, they are in the predicament of a woman who is in a state of amenorrhœa. Generally speaking, these cases are not dangerous; but they require antiphlogistic treatment. If the natural discharge of menstruation has ceased, and inflammatory hæmaturia has supervened, it may be right to attempt to bring it back again.

ORGANIC DISEASES OF THE KIDNEY.

The kidney is subject also to *chronic* inflammation; but you usually see the effects of chronic inflammation in the form of organic disease. Occasionally the kidney becomes *enlarged*. There is no particular alteration of structure; but the organ is evidently *hypertrophied*, and is perhaps firmer than usual. I presume this is an inflammatory affection. We must suppose that over-nourishment is, more or less, of an inflammatory nature; and that, from the great activity of the circulation, deposition has taken place.

Sometimes the kidney will become very *turgid*, and very *red*;—merely as the result of a difficulty in the circulation. Sometimes, after great dyspnœa,—after obstruction of the *heart*,—after obstruction of the *lungs*, the kidney, on being cut open, has been found full of blood;—so that you might, at first, mistake the appearance for that of active inflammation. But if there be active inflammation, the kidney is generally found *soft*; whereas the effect of chronic inflammation of this organ, is either induration or hypertrophy.

Frequently the kidney, instead of being red, is *pale*. After death has occurred from chronic disease, the body is generally found to be wasted; and not only are the *brain*, and the *muscles* pale, but the *kidney* likewise. The kidney, however, is sometimes pale through disease of its own; and then it is generally firmer and harder than it should be. You will recollect that, when I spoke of induration as a common effect of inflammation, I spoke both of *red* and of *pale* induration; and each of these kinds occurs in the kidney.

But the kidney is sometimes very *red*, or very pale, only in *spots*; and then it has a *mottled* appearance; you have what is called "a *mottled* kidney." Morbid paleness usually occurs in the cortical part; but sometimes the whole kidney is in this condition. Hypertrophy, attended with redness,—when it is partial,—occurs in the cortical portion; and that also will give rise to a mottled appearance. You may have a mottled appearance from one part becoming morbidly pale, while the other remains natural; or it may arise from one part becoming morbidly red, while the other retains its natural paleness.

Occasionally you will see the kidney *granulated*. Small grains,

more or less firm, are seen in different parts. Whether this is local hypertrophy or not, I do not know; but it is found most frequently in the cortical portion. These grains are of all numbers, and of all sizes.

Occasionally the kidney becomes excessively *soft*; so that you may break it up with your fingers; and this, I presume, may occur very rapidly. I have no cases in point to support this opinion; but, judging from what occurs in the spleen and liver, I should think that the softening may be very rapid. I know that softening of the spleen or liver, will take place in the course of a few days. A person, in perfect health, may be suddenly taken ill and die; and you will find these parts so soft, that you can run your finger through them in every direction,—break them up in a moment; and therefore I can conceive that the kidney may become soft either in an *acute*, or in a *chronic* way. When this organ is soft, there is the usual difference;—that is to say, the softness is sometimes accompanied with redness, and sometimes with paleness. Sometimes there is *inflammatory* softening; and sometimes this change appears to take place without any connexion with inflammation.

The kidney will sometimes *waste*. If one kidney waste, it is usual for the other to double its natural size;—in order to perform the duty of both. Nothing is more common, than to find one kidney enlarged, in proportion as the other is diminished. This wasting of the kidney will sometimes proceed to such an extent, that you will scarcely find any remains of the organ. I have met with cases where the kidney was discovered with the greatest difficulty; so that those who have first examined the body, have said that there was but one kidney. What is termed "a *horse-shoe* kidney," is where there is only one. That, however, is a rare case; but the organ is sometimes wasted to a less size than that of a horse-bean. Atrophy of the kidney sometimes takes place, without any ascertainable cause. Sometimes it is the result of inflammation; sometimes it is the result of abscess. A great discharge will cause atrophy of part of the organ. We produce counter-irritation, for the purpose of lessening morbid growths, and morbid activity of the circulation; and if, without morbid growths and morbid activity, a discharge takes place by suppuration, the activity of the part is diminished, and wasting is a very common circumstance. An abscess, therefore, will occasion a part to waste; according to the general principles on which we employ setons and issues. But pressure will have the same effect. The pressure occasioned by a tumor in the neighbourhood of the kidney, has been seen to produce atrophy of the organ. It is stated, by authors, that atrophy of the kidney is sometimes partial; so that the medullary portion only is wasted, and the pelvis becomes a mere bag. Sometimes the *cortical* part is wasted; so that the cones within the kidney nearly touch the external fibrous membrane;—there being only a thin layer of cortical substance between. Thus, you see, there are various degrees of atrophy; and they have all been considered as a frequent result of inflammation.

We have, however, other organic diseases of the kidney. In the cortical substance, serous cysts are very common; and, by their pressure and growth, they will cause an atrophy of it. As they increase, they cause more and more atrophy; till there is little more than a bag left. Cruveilhier has given a very good representation of these cysts. They are found more commonly in the kidney and liver, than in any other parts of the body. Serous cysts are sometimes found under the external membrane of the kidney.

The kidney has sometimes been seen converted to fat. A great deposition of fat, I presume, has taken place in the cellular membrane, under the external coat; and the rest has wasted. Sometimes it has been converted into *jelly*. There is a peculiar substance sometimes formed in the kidney, called *cholesterine*; and the kidney sometimes contains a great quantity of it, causing atrophy of the organ itself. Occasionally *encephaloid* disease occurs in this part. You may have great *disorganization* of the kidney;—you may have *tubercles* of various kinds; and even *scrofulous* tubercles have been found here.

All these diseases may occur with very obscure symptoms; but sometimes they occasion dull pain in the region of one kidney, together with more cr less disturbance of the stomach. The diagnosis is generally difficult; unless the pain is very local, and unless the urine becomes morbid,—very much affected. Even then,—when you have satisfactorily made out that there must be organic disease,—it must be very difficult, if not impossible, to say what that organic disease is. Scirrhus is said to occur in the kidney; but whether the affection is scirrhus, cancer, encephaloid disease, or a mixture of these, or a scrofulous suppuration, it must be difficult to determine. If organic disease occur in a young person, and there is not much pain, you may suspect that it is encephaloid. If there be strong marks of scrofula;—if the ends of the fingers be enlarged;—if there be mesenteric disease, or phthisis,—you may suspect that the affection of the kidney is of a scrofulous nature. If the person be advanced in life, you may suspect scirrhus or cancer. But it must, as I have said, be very difficult to say what the particular organic alteration is; and it can make no difference as to the treatment; which must be conducted on general principles. Dr. Baillie states that, according to his observations, the kidneys are more frequently affected in *men* than in *women*.

DISEASES OF THE RENAL CAPSULES.

I may mention, as a point of Pathological Anatomy, that the renal capsules are rarely diseased, except from scrofula; but I have frequently seen them in that condition. Sometimes they are indurated; and the induration may amount to cartilage, or even to bone. As to the symptoms, nothing can be said on that subject.

FUNCTIONAL DISEASES OF THE KIDNEY.

Having spoken of those diseases which are the result of *inflammation* of the kidney, and of *structural* diseases, I will now proceed to

consider *functional* diseases of that organ. The kidney is subject to an *increase* and to a *diminution* of its secretion. It is liable to secrete *morbid* urine;—to secrete a substance which it ought not to form in that particular way; or which, if it be produced, should pass off with the urine. Besides these affections, the urinary organs are subject to be infested by worms.

ISCHURIA.

The first disease of which I will speak, is a diminution of the secretion; and this is called *ischuria* (from ισχω, *to restrain*; and ουρον, *urine*). The *suppression* of urine, the *absence* of urine, or the *diminution* of urine, when it occurs in the kidney, is called "ischuria *renalis*." If urine be formed in the kidney, but cannot escape from it, owing to some obstruction in the *ureters*,—then it is called "ischuria *ureterica*." If there be some obstruction in the *bladder*, it is then termed "ischuria *vesicalis*." If there be obstruction in the *urethra*, it is denominated "ischuria *urethalis*." There is no analogy in these different words. If the urine be *suppressed*,—that is to say, if none be *formed*,—we call it "*suppression* of urine;" if, however, it be formed, but cannot *escape*, we call it "*retention* of urine;"—so that "ischuria *renalis*" and "ischuria *vesicalis*" are not at all analogous; and young beginners are often laughed at in the hospital-wards, for saying "*suppression*," when they ought to say "*retention*;" and *vice versa*.

The *suppression* of urine,—a deficiency of the *secretion*,—may be entirely inflammatory; and then you have symptoms of nephritis, and you must treat it as inflammation. But sometimes this complaint is unconnected with any symptoms of inflammation of the part; and it certainly is then a curious affection; for it is usually followed by apoplexy. No urine is made, or scarcely any; and, at last, absolutely none. You feel no fulness of the bladder; and when you pass an instrument into it,—to ascertain whether it is a case of retention or not,—you find that the organ is empty. In general, the patient very soon becomes drowsy; which drowsiness increases, till he becomes decidedly apoplectic, and perhaps dies. Dr. Parr, in the "London Medical Dictionary," mentions a case, where no urine was made for six weeks; and Haller quotes an instance, in which it was said that no urine formed for twenty-two weeks. These are very chronic cases; and one cannot answer for the truth of that which Haller alludes to. I presume he mentions it on the authority of another. The disease has sometimes been ushered in with rigors, and sometimes not. Sometimes it has occurred without any particular symptom, till coma has made its appearance. Following the course of diseases of the kidney, it occurs more frequently in men than in women. It usually takes place in fat people; and especially in those who are upwards of fifty years of age.

When the urine has been suppressed in this way, it has occasionally escaped from some other part of the body; and when the urine has

not been suppressed, but, though formed, has not been able to escape,—in consequence of some obstruction,—it has been absorbed; and has passed off by some other organ. I know instances where it has been *vomited*; and I saw a case where it passed from the *skin*,—particularly the palms of the hands. Persons in these circumstances,—who have made no urine; or whose urine, when secreted, could not escape,—have occasionally vomited a fluid, which had the smell and taste, and all the other qualities of urine. Others have passed it in the form of perspiration. There can be no doubt of the truth of these cases. I presume that, in the latter case, the fluid has been absorbed, and re-secreted; and, in the former case, it has been secreted originally, and has not been absorbed at all.

In "ischuria renalis," it is very common for the individual to become apoplectic; and it is, therefore, a very dangerous disease. I have had but one case of it, and that occurred after a person had taken a quantity of corrosive sublimate by mistake. Proper means had been used, and no harm was thought likely to occur; but, after a certain time, the urine became suppressed. I think the individual had hemiplegia; but I recollect, perfectly, that he became drowsy; and the drowsiness increased till, at length, he became decidedly apoplectic, and died. One might imagine, in such a case, that the same occurrence must have happened, as when the urine has been vomited, or has been thrown off by perspiration;—namely, that the urine was re-secreted into the ventricles of the brain. One would say, *a priori*, that that was likely to take place; or, if no urine was secreted, that an excessive quantity of fluid would be found within the brain. Nothing of the kind, however, was discovered in this case. There was not only no *urine* in the head; but no excess of *fluid*, either *in* or *upon* the brain. That was a result for which we were not prepared.

The proper mode of treating these cases is to give cantharides. I do not know whether oil of turpentine has been tried; but cantharides, I know, is a proper medicine. In the case I saw, a blister was applied, and the medicine was given internally; but the patient died within a few hours of its exhibition. However, a friend of mine had two cases which occurred nearly together, in old people; and one of them was so bad, that Sir Astley Cooper, who was called in, had little hope of saving life; but he treated the case in a way which, he said, had been found successful; and the patient got perfectly well. In the second case, my friend adopted the same plan; and it was attended with the same success. In the latter case, it appears that the kidney had become torpid; but not through inflammation. Whether other diuretics would answer, I do not know; but it is said that cantharides should be given internally, and a large blister applied to the loins,—in order that the medicine may have more effect; because the surface has much influence over the internal parts. When it is exhibited internally, it should be in the solid form; because the tincture is a most uncertain preparation. You should give a grain once or twice a day, or every eight hours;

whichever you choose. A grain is a pretty strong dose; but, in a case of this description, there is no time to be lost, for apoplexy may soon come on; and therefore you should repeat the dose, as long as it does no harm. I have given ten, fifteen, or twenty drops of the tincture, without any effect; and, at last, I have been obliged to give two or three drachms. The tincture, I presume, was not good; but it has been so common an occurrence, with me, to find the tincture either bad from its nature, or bad from its being so continually ill made, that I place no confidence in it, in a case of life and death, where there is no time to be lost.

DIABETES.

The term "*diabetes*" is derived from the Greek word διαβαινω,—*to stream through*;—the disease being characterized by the "streaming away" of a considerable quantity of water. This affection, on account of the excess of fluid, has sometimes been called *hydrops ad matulam*,—"chamber-pot dropsy;" but as there is no *accumulation* of fluid, it cannot, without great impropriety, be called "*dropsy*." In dropsy there is an *accumulation* of fluid;—not merely a *formation* of it. It is formed faster than it comes away, and therefore it is termed "dropsy;" but as, in diabetes, the water comes away, the word *dropsy* has been applied to it with the greatest absurdity.

The word "*diabetes*" is usually employed to signify *chronic* excess of urine. A person would not be said to have diabetes, if he merely made a large quantity of urine for a day or two. The fluid may be either of a natural quality, or it may contain sugar. As, however, there is no distinct single name for that disease in which sugar is formed in the urine, and as it is sometimes formed without the urine being at all in excess, it would be well, perhaps, to restrict the term "*diabetes*" solely to *saccharine* urine, and to give such a name as "*polyuria*" (from πολυς, *much*; and ουρον, *urine*) to that form of the disease, in which there is merely excessive *quantity*. But you find "*diabetes*" employed to signify a chronic excess of urine, whether there be sugar in it or not:—the one being called "diabetes *insipidus*," and the other "diabetes *mellitus*,"—*honey-like*,—sweet to the taste. It was to an *excessive quantity* of urine, that the ancients applied this term; for it does not appear that they were at all aware, that the urine was ever sweet. I believe it was Dr. Willis, the English physician, who first pointed out that, in this disease, the urine is sometimes saccharine. The term is certainly employed by the ancients simply to denote a chronic *excess* of urine.

You are aware there is frequently a *temporary* excess of urine, in various diseases. In asthma, for example, a large quantity of pale urine is frequently made. So, again, in hysterical and dyspeptic people, this is often the case. You know, likewise, that fright will cause a temporary excessive quantity of urine; so that persons who have been waiting anxiously to be called into a room, have been obliged to walk out twenty times in the course of an hour. Long-continued grief and anxiety, have the same effect. I have known

persons, from leaving off some of their clothes, make a considerable quantity of urine; and it has been remedied by wearing their usual quantity of clothes again. But, independently of the circumstances I have now mentioned, there is sometimes formed an excessive quantity of urine; not at all impregnated with sugar, and occurring without any evident cause. This form of the disease,—which (as it sometimes has been) might as well be called *polyuria*,—is occasionally followed by that form in which the urine contains sugar. But sometimes it exists alone; and I believe that, not unfrequently, after a length of time, it will cease. This incipient diabetes is more common in women, than in men. The urine is very pale, in general; and if it continue, thirst and dryness of skin are mechanically produced. An excessive secretion of water is going on in one part of the body; and there is therefore less water for the secretion of the mouth and skin. From the loss which the body sustains, there is also weakness and hunger. This condition may frequently be recovered from, by wearing warm clothing, employing the hot-bath, or going to a warm climate; and by the exhibition of iron. Persons who have laboured under this form of the disease have, by medical men who have not properly examined the urine, been said to be cured of diabetes; as though they had had the saccharine form of the disease.

In diabetes mellitus, or *true* diabetes, there is sugar in the fluid; and generally there is also an excessive quantity of fluid. The general symptoms that I just now mentioned, are produced in this affection. From the loss which the body sustains, there is great debility; from the body losing its nourishment, there is hunger; and from the want of fluid, there is thirst and dryness of skin. The hunger is sometimes excessive; so that the patient not only feels very hungry at the usual time of his meals, but he feels hungry during the greater part of the day. The food which the patient takes, does him (he says) "no good;" and he is presently anxious for more. Patients generally complain of a sinking at the pit of the stomach; and the uneasiness there occasionally amounts to aching. The thirst is sometimes so great, that many quarts of fluid are drunk in the course of the day; and the skin is sometimes so dry, that the hair falls off. The feet and hands are frequently cold; there is lowness of spirits; and, in almost every case, peevishness and fretfulness. There is also one very remarkable symptom;—the loss of sexual power and desire. I have never found this symptom absent; and sometimes is has been the very first symptom noticed by the patient. I never had a patient labouring under diabetes, in whom the feeling of sexual power and desire had not ceased entirely, or become very much impaired. This symptom is not noticed by all authors; and a patient, of course, will not mention it to you; but if you make a point of inquiring into it, you will, I believe, nearly always find it to be a fact. There is also frequently pain of the loins; but whether it arises from an affection of the kidney, or is merely a symptom of debility, I do not know. Although

the whole body becomes emaciated, there is frequently œdema of the legs; and usually there is costiveness. From the deficiency of fluid in the alimentary canal, there is not only dryness of the skin, and thirst, but the tongue is sometimes white and clammy. Frequently, however, it is smooth and red; and the saliva and mucus are excessively tenacious;—so that the patient is very much annoyed. The gums, sometimes, become very red, and slightly ulcerated. The saliva is occasionally sweet; and so likewise is the breath. Dr. Latham says that the body smells like hay. I have not observed this; but the breath frequently has sweet smells;—has something of the odour mentioned by Dr. Latham. Very often there is redness and soreness of the end of the urethra. I have ever seen phymosis; which may arise, perhaps, from the irritating quality of the fluid. We usually find the pulse quick,—perhaps full; and at last it becomes weak. There is a hectic appearance in the patient's face;—you frequently find a flush upon his cheek, as well as quickness of the pulse; and, at last, you have decided hectic. In many cases there is great sweating,—I have frequently seen it. Phthisis is a very common termination of this complaint. Indeed, the majority of diabetic patients whom I have attended, have died of phthisis. The urine has a particular odour, which is not perceived by smelling the pot; but if you partly fill a phial with it, and keep it corked for a little time, on withdrawing the cork you may perceive a peculiar smell,—something like peppermint. It has also a sweet taste; which you may ascertain by desiring the patient to taste for himself. Generally the urine is clear, and of a lemon-colour. Besides the presence of sugar, there is usually a diseased secretion altogether.

Professor Frank, of Vienna, saw a case in which, on an average, forty pints of urine were made in a day. There were sometimes as much as fifty-two pints. He says that other authors have mentioned fifty-two pints being discharged. He also states that he saw a case, in which the quantity voided, in a very few days, exceeded the whole weight of the body. Usually, however, the quantity of urine discharged, is from six to twenty pints *per diem*. On the other hand, the urine is sometimes very little increased in quantity; and sometimes not at all. Professor Frank mentions a few cases of the disease, where the quantity was not increased; but it contained so much sugar, that from two pints of fluid six ounces of saccharine stuff were obtained. One patient of mine made, at last, but three pints of urine in a day;—which was less fluid than he drank. Dr. Heberden mentions a case, in which the urine made was double the quantity of the fluid drunk. Such are the varieties as to the quantity of urine.

With regard to the quantity of saccharine matter, Dr. Dobson procured an ounce of saccharine extract, by evaporating a pint of urine. Cruikshank obtained three ounces and a quarter from thirty-six ounces troy; and found the specific gravity to be 1·040. From ten pints of urine, he obtained a pound and a quarter of solid extract. Dr. Prout, from a pint of urine,—the specific gravity of

which was 1·050,—obtained two ounces of thick stuff; and from this he procured one ounce and a half of sugar. Frank says that, from twenty-four pints of urine, he obtained twenty-six ounces of saccharine extract. The sugar obtained from urine, is like that procured from grapes. From the presence of sugar, the urine undergoes a vinous fermentation; so that, at a certain time, if it be thrown into the fire, it burns;—just as if you had thrown in so much spirits. Still later the urine becomes quite sour. The usual changes which sugar is capable of producing go on; that is to say, you have vinous and acid fermentation.

These, however, are not the only circumstances in this disease; for there is frequently but little urea in the urine;—little lithic acid, and little of the usual salts. Not that they are *absent*; for I saw them all myself in the patient's urine, which I mentioned as containing so large a quantity of sugar. But it is said that, in general, they are very *deficient*; and deficient in proportion to the quantity of sugar formed. The weight of the urine, in this disease, depends upon the quantity of sugar; and the quantity of sugar is such as to augment the weight very considerably. The specific gravity of healthy urine is generally from 1·010 to 1·018; but *diabetic* urine is from 1·030 to 1·050; and I think I have seen it above that. This excessive weight, as I said before, depends upon the presence of sugar.

It has been supposed that the presence of the sugar is dependent upon the deficiency of urea; and urea and sugar, you know, contain exactly the same quantity of *hydrogen*; while the quantity of *carbon* and *oxygen*, in sugar, is twice that of those substances in urea. It has therefore been supposed, that there is only a morbid change undergone in the composition of the urine;—that instead of *urea*, you have *sugar*. However, this is certainly not accurate; because I have seen a large quantity of sugar in the urine, where there was likewise a considerable quantity of urea. Still, it frequently does happen that, in proportion as the one is deficient, the other is abundant. It is by no means proved, I think, that sugar is merely altered urea; and those have mistaken the matter who say, that urea is absent in diabetic urine; for sometimes a large quantity of urea is found in true diabetes; where, of course, there is a large quantity of sugar.

If the disease take a favourable course, Dupuytren and Thenard assert that, before the salts and urea appear again, albumen is found. Dr. Prout mentions, that the worst form of diabetes is where the urine is albuminous;—where, besides sugar, you find albuminous flocculi in the urine. In a fatal case of mine, not long before death, there were albuminous flocculi. These flocculi increase the fermentation, which the urine experiences from the sugar.

It is pretty certain that no sugar is found in the *blood* of these patients. Dr. Prout, who is very nice in his examination of these things, says that he has sometimes seen something *like* sugar; but as

for *true* sugar being found in the blood, it has been looked for by a large number of chemists, but in vain.

In this disease, the blood is sometimes of an unnatural appearance. It is said, by Dr. Watts of Glasgow, to be a little like treacle, and of a bluish colour; but this is not an invariable circumstance; for I have not noticed it myself. It is asserted by Dr. Watts; who, I dare say, may be depended upon. The serum of the blood had a white fluid swimming upon it; and the blood was buffed. I mention this to show, that you may have these things, at the same time that the urine contains sugar. There is no connexion between them; only the presence of one does not exclude the possibility of the other being present also. I may mention that Vauquelin found no sugar in the blood of a person, whose urine actually contained one-seventh part of sugar. He also says that he found no *urea* in the blood of this individual; though he gave him a large quantity by the mouth, for some days. He also states that an opposite occurrence takes place here, to what is observed in scurvy;—namely, that the blood will not putrefy so soon as in health. In one case of my own, and which I believe was the only case in which experiments were made, it was found that the more sugar the urine contained, the larger was the quantity of carbon discharged from the lungs.

This disease may last many years; and it may prove fatal by phthisis;—that is to say, it may induce phthisis, or be followed by it. Express the fact in any way you choose;—diabetic patients frequently die phthisical. They sometimes die from mere exhaustion, occasioned by the disease; and sometimes they die suddenly; but the most common terminations are phthisis, and mere exhaustion. It may destroy a patient in a year or two, or it may remit; and I believe it may cease, or be cured. Dr. Gregory used to say that he knew a case, where the saccharine quality of the urine ceased in two days, and did not return; but whether the observations were made with all the accuracy that we require, in modern times, I do not know. Usually the appearance of sugar, and the excessive quantity of urine, decline together;—that is to say, in proportion as the quantity of urine becomes less, so does the proportion of sugar. You may have the quantity of urine diminished, and yet the proportion of sugar to that quantity remain the same; and, on the other hand, it is asserted (though I have not seen it,) that the sugar sometimes diminishes in absolute quantity, while the urine remains in the same excess as before. As, however, the sugar absolutely lessens, so do the salts, the lithic acid, and the urea, generally increase. The colouring matter of the urine is usually deficient, as well as the lithic acid and salts; and sometimes the sugar entirely disappears before death. I have seen the urine, in diabetic patients, suddenly cease to have a particle of sugar in it; and yet the patient has died in the course of three or four days.

After death, you will frequently find no morbid appearances whatever. I have several times opened diabetic patients; and, as

far as I could judge, I have found the whole of the body sound throughout. The kidneys have sometimes been enlarged a little;—sometimes a little redder or fuller than natural, and a little flabby; but that has been all; and sometimes I have not seen even that. The ureters are said to be sometimes florid; but Morbid Anatomy alone certainly gives you no explanation of this disease. Suppose you see the kidney fuller or larger than natural, and the vessels rendered more distinct, that is nothing more than you would expect, from the kidney being stimulated to excessive action; and whatever may be the cause, that appearance of the kidney certainly does not explain the saccharine quality of the urine.

Diabetes is by no means confined to adults; for it frequently affects children also; but it is not so easily observed in them. It occurs much more frequently in men, than in women; and it occurs much more frequently in some countries, than in others. Professor Frank says, that he saw but three cases of it in Germany, for twenty years; and that when he practised in Italy, he saw but seven cases in eight years. There are far more cases of it in Edinburgh, than in London. When I was a student in Edinburgh, there were always some cases of it to be found; but I do not recollect having a case in London, for two years.

Sometimes it is produced by grief. I have seen it produced by the long continuance of the depressing passions. It is sometimes occasioned by chills;—by the exposure of the body to heat and cold alternately;—especially when the body is in a state of perspiration. It sometimes appears to arise from strains of the loins. Whether whiskey has any particular power in producing it, I do not know; but it is far more common in Scotland, than in England. I suppose they drink as much whiskey in Ireland, as in Scotland; but whether the disease is equally prevalent there, I do not know. Dr. Latham says, that he has seen the disease come on after boils; and I have heard others, I think, confirm the observation. Excess of venery appears likewise to be a cause of it. Some authors mention this most decidedly, as a cause of the disease; and, in some instances, I have asked the question of young men; and they have replied that they had indulged to great excess. Whether they had or had not, I cannot say; because people feel differently as to what is excess. I saw it, however, in one man, who had committed no excess of this kind; for he said he had never "known a woman;" but he died of the disease; and it is very possible he had committed excess of a less creditable kind. I rather think this was the case, from the great length of the prepuce. Sometimes there is no evident exciting cause at all; and, in some cases, it is evidently constitutional and hereditary. One German writer mentions having seen seven cases of the disease in one family. Dr. Gregory said that he saw three cases in one family; and Dr. Prout knew a mother, an uncle, a brother, and a sister, all affected with the disease.

The diagnosis of the disease is easy enough. It may be made by measuring the quantity of fluid, by weighing it, and by analyzing it.

You obtain, in diabetes, a brown treacly extract; which, on tasting, you find to be sweet. No one can object to taste it; for it is not urine, but sugar. When the fluid is evaporated, there is nothing left but "hard-bake;" which tastes just as well as any *other* "hard-bake." But although the disease is made out easily enough, when you suspect its existence, and it really does exist, yet it is a disease which is continually overlooked. It comes on so insidiously, that many persons have it for a length of time, before the medical attendant suspects its existence. The patient complains of being weak and languid; does not know what is the matter with him; and the quantity of urine may not be such, as to attract his attention;—so that frequently no light is thrown on the disease. I have known so many cases of this kind passed over, that when I see a patient complaining of weakness, and can discover no evident cause, I always question him as to the quantity of urine. Not long ago, I saw a patient who must have had diabetes for some years; but that circumstance never struck my mind. He had disease of the heart, which was killing him; and it was not till I saw him three or four months afterwards, that he spoke of the quantity of his urine. The disease of the heart explained every symptom of which he complained; but upon being told that there was something wrong in his urine, I evaporated a portion, and found it was diabetic; and he then stated that, for several years, he had made an excessive quantity of urine. No disease is more easily passed over;—unless the patient chances to mention, that he makes a larger quantity of urine than usual. When you see a patient emaciated, complaining of thirst, with a good appetite, and a dry skin; while you can see no reason for these symptoms, either in the chest or abdomen,—it is well always to inquire into the state of the urine.

As to the real nature of the disease, some declare it is situated in the kidney; others that it is situated in the stomach. Many of the symptoms are as easily explained on *one* supposition, as on the *other*. Many of them are referrible altogether to the discharge of fluid. The thirst and the dryness of skin are referrible to the loss of fluid. So, again, the costiveness, the emaciation, the hunger, the debility, and the sensation of sinking at the stomach, are all referrible to the mere loss of so much substance, as must be lost in the production of sugar. But the absence of sugar in the blood, and the very frequent absence of dyspepsia, or anything connected with the stomach, except the hunger, (which the excessive loss will explain), make it appear to me most probable that the disease is situated in the kidney.

Perhaps this is the most singular disease in the animal economy; for the nature of it is not known; and the treatment which is found useful, is as singular as the disease itself. The remedies are directly opposite. There can be no doubt that repeated venesection has sometimes lessened the symptoms very much; and it is sometimes borne remarkably well. You will find a sufficient number of cases on record to establish the fact, that bleeding is occasionally very useful in the disease; not bleeding to syncope,—not *violent* bleed-

ing; but *repeated* bleedings,—taking from eight ounces to a pint. I have employed this method; and have seen it borne in a remarkable manner. In many cases, the urine diminished and the quality improved, while venesection was going on. But though there can be no doubt of its utility, yet it has frequently failed. Some prefer the application of leeches to the epigastrium; and some cupping on the loins. Then, again, stuffing the patient with rump-steaks (which is a practice directly opposite to bleeding) has also answered as good a purpose. Many persons have their urine improved, by being confined to animal diet,—eating nothing but meat; but still one would imagine that this would not go to the root of the complaint, wherever it may be. It is like giving phosphate of lime in softness of the bones, and taking carbonate of soda to remedy acidity of the stomach;—it is merely *alleviating*, not *curing* the disease. But you will find it the most difficult thing in the world to make a person adhere to animal diet. He becomes so disgusted with it at last, that he says he would rather starve than eat meat every day. I never found a patient able to continue it for a length of time. Still, as there is a great weakness, it may be well to make a patient live on meat as much as possible; and you will find as strong evidence in its favour, as in that of bleeding.

Then there can be no doubt that opium has a great power over the disease; it increases the quantity of lithic acid,—the quantity of urea; and lessens that of the sugar. I have seen this proved over and over again;—nay, so great is its influence, that a very great quantity will diminish the *urine*, as rapidly as it will diminish the *sugar* in the urine. I once, finding a man dying of the disease, gave him opium so freely, that it induced stupor, and some degree of delirium; and, in the course of sixty hours, the quantity of urine was reduced from *eight* pints to *two*, in the twenty-four hours; and, from being very heavy, it lost the greater part of its morbid specific gravity; and absolutely lost the whole quantity of sugar. Indeed, urea was produced in excess;—the urine contained more urea than it does in health. The man died, a few days afterwards, of phthisis; but the quantity of opium produced the effect I have stated. In general, by giving opium, in increasing doses, you lessen the amount of urine, and likewise the quantity of sugar. Of course, the opium may be increased, in this disease as it may in any other; and one man, who began with half a grain, three times a day, at last took as much as two scruples, three times a day. It never confined his bowels; which it usually does where patients take a large quantity. His urine became natural; when, through a mistake on the part of those who made up the prescription, he had forty grains of blue pill, which he took three times a day. Thus there was an *absence* of the *opium*, and the *presence* of a strong *purgative*,—a strong *mineral poison*; and instantly the sugar was brought back into the urine, in the original quantity, and the urine also was increased as before. The opium was renewed again; but I never made an impression on the disease afterwards. Whether the benefit would have continued, I do not

know; but the urine became healthy; the mistake was made; the patient fell back; and I never again made the slightest impression, by the same dose of opium.

It is said that other narcotics answer as well as opium; but I am not aware whether that is the case. However, I have never yet cured the disease even by opium;—at least, I am not certain of it. There was one man who, by repeated bleedings, *appeared* cured; but I did not see him afterwards. By opium, however, by animal diet, or by any other means, I do not know that I ever cured a case. I dare not say that the man was cured, in whom the repeated depletions were had recourse to. Of course I am speaking of *saccharine* diabetes; as for "diabetes *insipidus*," that may be effectually removed.*

The steam-bath and the hot-bath have been strongly recommended; but I confess that I have used them without any material benefit. Iron has also been recommended;—particularly the phosphate; but I employed the carbonate†, and it appeared useful; though I have never seen it cure the disease. I have not had sufficient experience of the disease in children, to say whether it may be cured. I saw a child, about two years ago, making an excessive quantity of urine; and I think this urine was said to be saccharine; but this state lasted only a few days. I will not take it upon me to assert, that the disease is never cured in children. Alum, catechu, and astringents, are said to be of service; and it is alleged that they have sometimes cured the disease. But what I would recommend, if the patient's strength would bear it, would be venesection, and a confinement as much as possible to animal diet; and there is no reason why you should not give opium, and at the same time phosphate of iron. These all act in a way that we do not understand; we are not sufficiently acquainted with the disease to say that they will not do good; and if I found a remedy serviceable, I would recommend a patient to use it. It is right always to make a patient wear plenty of clothes;—to keep the surface as warm as possible. Warm clothing, and exercise to sweating, have been recommended; but I have known persons perspire profusely in the disease, without any good being done.

EXCESS OF UREA IN THE URINE.

There is an affection very similar to diabetes, and sometimes mistaken for it; and that is, where the urea is in excess. I do not know that the disease has been noticed by any one except Dr. Prout; but I have seen several cases of it; all of which have done well. There is debility; lowness of spirits; pain in the loins; thirst; an excessive quantity of urine; a diminution and frequently a loss of sexual power; often irritation at the neck of the bladder; and a frequent desire of making water. The urine is pale, and likewise heavy,—perhaps the specific gravity is from 1·025 to 1·030. It is

* In the Lancet for December 1, 1832 (No. 483, Page 319) will be found a case illustrating the efficacy of Muriate of Morphia in this disease.

† The *Sesquioxide*.

acid: but soon grows alkalescent. On evaporating the urine, you find there is no sweet extract; and if you add strong nitric acid to the fluid, you have a precipitation of the urea. This state of the urine is frequently seen where the phosphates are in excess. Equal quantities of nitric and muriatic acid must be added, in order to produce crystals. The remedy for this state (as for diabetes) is opium, and likewise iron. I have seen these cases yield to the exhibition of one, or both these remedies. Dr. Prout has cured many cases, which were thought to be diabetes, till he examined the urine, and found no sugar in it. The patient complains of the symptoms I have just narrated; and if you find it to be this disease, it may yield to the remedies I have named. If the patient's health be improved, the disease may cease spontaneously. It is by no means a formidable disease,—like the formation of sugar.

You will recollect that I mentioned, before entering on the consideration of particular parts, that just as, with respect to the *solids*, we have an excess of developement,—an alteration of natural structure, so the same is observed occasionally in the *fluids*. The natural constituents become changed in their proportions; and just as, in one part of the body, we have cartilage, or bone, where it ought not to exist,—so, with regard to the fluids, we find them containing something which ought not to be there; but still something which is natural to the body; or we find them containing something in excess. Again,—as, with regard to *structure*, we sometimes have a new structure altogether,—a structure that ought not to be in the body at all;—such as melanosis (if you choose to call that a *structure*), and scrofulous disease, which is a foreign substance;—so occasionally, in the *fluids*, we find things that ought not to be there at all. Of these sugar in the urine is an instance. We have changes in the fluids analogous to *transformations* in the solids; and we have further changes, which are analogous to *new formations*.

SEROUS URINE.

Before speaking of that disease in which there is sugar in the urine,—which is a *new formation* altogether, and not found in any part of the body,—I ought, for the sake of uniformity and consistency of plan, to have said a word or two upon some other affections;—those in which there is merely a *transformation*, if I may so term it;—in which you find in the urine things which are natural to the *body*, although they ought not to be present in the urine. One of these articles is serum,—the presence of which is easily ascertained by the application of heat. It coagulates (as you know albumen does) at 160 degrees; or it will coagulate on adding a small portion of acetic acid, and then prussiate of potass. I spoke of this as occurring sometimes in inflammatory dropsy, sometimes where there is no inflammation to be discovered, and sometimes where there is no disease of the kidney to be ascertained. When serum exists in the urine, the urine may be of its natural quantity, or it may be below it, or it may be in excess. Generally the urine when made

is pale; sometimes it is, when first made, a little opaque. I need not say anything more about this, as I spoke of it so fully when treating of dropsy.

CHYLOUS URINE.

Fibrin sometimes exists in the urine;—not as a deposit from the ureters or bladder, but really as the product of the kidneys. At least, it was so in a case which I saw. I have seen only one case, but that I repeatedly examined; and I found it was the fibrin of chyle. There is the fibrin of *chyle*, as well as the fibrin of *blood*; and it is sometimes found in the urine. The case that I saw was very remarkable. The woman was otherwise in very good health; but soon after she passed urine, a coagulation took place; and there was a quantity of something exactly like *blanc mange*;—as much as a tea-cup full. Occasionally it coagulated, so that she could not make water. I never saw such a case before; but I showed the discharge to Dr. Prout; who examined it, and ascertained that it was chyle. She went on, in this state, for two or three years; and, in the midst of it all, she gave birth to a child;—it seemed to make no difference in that way. I have every reason to believe she is now alive. Dr. Prout has seen six or seven cases since that time. I wished to make some observations upon her; and begged her not to take any food for twenty-four hours;—in order that I might see if it would check the formation. There was this change produced;—the coagulum approached nearer to blood. It had a fine pink colour; and the more she fasted, the more it approached to red;—it was more and more converted into blood. There was no fresh food taken to form fresh chyle; and consequently the chyle became more like blood. Around this coagulum, there was a fluid, which was very serous,—contained a good deal of albumen in solution; and, of course, there was urine; but the fluid scarcely smelt of urine, till it was concentrated. One hundred grains of the fluid, on evaporation, gave only half a grain of urea. Nothing was done in this case; but Dr. Prout told me that, by giving opium constantly, two or three times a day, he had been successful in curing this disease. The quantity of substance was altogether deceptive to the eye for, on evaporating this large coagulum and examining it, there was very little solid matter; and therefore the loss to the system was by no means so great as, at first sight, we must have imagined.

DISCHARGE OF FAT.

Fat has occasionally been found in the urine. When speaking of a discharge of fat from the intestines, I stated that, in some cases mentioned by authors, fat was found in the urine; and in one case, in a lady whom I know, but whom I do not attend, the gentleman under whose care she is assures me, that a large quantity of fat is discharged along with the urine.

URINARY SEDIMENTS.

With regard to concretions, they are of a mixed nature. They may consist merely of the natural constituents of the urine; and may therefore be analogous to those diseases of the solids called *transformations*;—in which things naturally found in the body are present. Or they may be new substances,—such as ought not to exist in the body at all;—being analogous to those which are termed *new formations*, or *non-analogous* changes of structure. I shall now, therefore, speak of those substances which are termed *urinary concretions*; but before entering on that subject, it is necessary to make some general remarks, on the nature of urine and its constituents.

Healthy urine, when it is first made, is acid. It will stain litmus-paper; and, if the bladder be not very retentive, and if persons be not very particular, (as is sometimes the case with old gentlemen), their dress will be stained;—it becomes red on account of the acid in the urine. Chemists say, in general, that the urine is acid when first made; but Dr. Prout contends that it is not pure uric acid, but lithate of amonia, that stains litmus paper red. But the urine sometimes contains *nitric* acid; and you know that, if nitric acid be added to lithic acid, erythric acid is produced. It is of a very fine scarlet hue; and is a substance that does not exist naturally in the urine. If you add to this erythric acid pure ammonia, you then have another change;—a purpurate of ammonia is produced; and if you treat this purpurate with potass, and then again with sulphuric acid, you have a new acid formed,—called purpuric acid; so that erythric and purpuric acid do not exist naturally in the urine, but are the result of other changes. Thus you perceive that, if nitric acid be formed by disease in the urinary secretion, it may give rise to the presence of the purpurates. Purpuric acid may be formed; and then (as there are soda, potash, and ammonia, in the urine) you may have the purpurates of soda, potash, and ammonia; and if these are added to the lithate of ammonia, then the lithate of ammonia which may exist in the urine, becomes of a fine pink or red colour; and you have a pink or red sediment. You see, therefore, that the pink and red sediments are essentially lithate of ammonia, which is formed in excess,—so as to be insoluble at a common temperature; and they are deposited in the urine because they are in excess, or because the *acid* is in excess;—they are superlithates. You know that the lithate of ammonia, and the other lithates, are *white* of themselves; but from the presence of the purpurates, they acquire a *red* or *pink* colour; and if the yellow matter of the urine be absent (as in hectic), then, instead of being *red*, they become *pink*. All this, however, is comparatively unimportant.

In pyrexia, nitric acid appears to be formed in the urine; and the lithates (particularly the lithate of ammonia) are in excess; and in consequence of the excess of lithic acid, or of lithate of ammonia, and the formation of the purpurates by nitric acid, you have a copious red sediment produced; and though it is originally owing to

the nitric acid, yet it is some of the lithates (generally the lithate of ammonia) which has been rendered red by the presence of the purpurates.

Now all this may be produced by the sympathy of the kidney with any other organ that is affected. From mere catarrh,—slight inflammation of the mucous membrane of the air-passages, you will have this effect produced. In fever, and in inflammation, the same occurrence takes place. If there be organic disease, especially of the liver, it has a tendency to produce pink sediment;—that is, it causes an absence of the yellow matter; and consequently the sediment is pink. Very trifling things will produce this state, in some people. A little pie-crust, or pastry, may cause a red or yellow sediment. Anxiety, strong exercise, or (as I have said) the slightest causes or derangement, will give rise to it. Hence Dr. Prout has called this,—"the sediment of health;" though it is seen in disease. He means that it occurs from such slight causes, that it is hardly worth while to consider it as an indication of disease. All is not right, but still it will happen every day; and, indeed, by far the most frequently when the person is in a state which you cannot denominate "indisposition." Generally the redder or the pinker the urine is, the more scanty is its quantity.

This sediment, you are aware, does not appear till the urine cools. The temperature of the urine, when in the body, is sufficient to keep these matters suspended; and therefore it is generally passed clear; and it is not till the fluid is cool, that the sediment appears; and even then, if the person make water a short time afterwards, the heat of the fresh quantity of urine, causes the sediment of the former to be dissolved again; though, of course, a second cooling occurs. For this reason we observe this sediment far more frequently in *cold*, than in *warm* and *hot* weather. In hot weather, though the urine perhaps contains everything necessary for such a deposition, yet it does not produce it; but in cold weather, if it so happen that the urine is not in excess (as it so frequently is),—if we are not chilled,—if we are in a warm room,—if we do not diminish the perspiration, the quantity of urine remains the same as before; and then, on making water, in a cold room, you are almost sure to have this sediment; although, in summer, in the same circumstances, you would not; for the external heat would then be quite sufficient to keep these ingredients in a state of solution.

The sediment, when red, runs by gradual approaches through a light brown, (the colour of ripe hazel-nuts) to absolute white. There is the greatest variety in the shade of colour. Sometimes it is red; sometimes it is reddish; sometimes it is the colour of a hazel-nut; and so on;—fainter and fainter, till the sediment is nearly white, or perhaps quite so. When you see *red* or *pink* sediment, the urine is generally *more* acid than in health; and when it approaches more to *yellow*, it is *less* acid. It shews that there has been less nitric acid; and that less of the purpurates have been formed. A less change, therefore, has been produced on the lithate of ammonia by the pur-

purates; and therefore you have a fainter colour. This is all very intelligible: but it is necessary to shew it, in order that it may be fully understood. In those states of the body in which there happens to be nitric acid formed in excess, you have the purpurates; and the purpurates being present, and united with lithates, you have a red or a pink colour;—just as it may be. In the case of red or pink sediment, therefore, you find the urine acid; but if it so happen that nitric acid is not formed in abundance, then the purpurates are not produced in so much abundance; and therefore they cannot change the colour of the lithates (which is naturally *white*) to a *red* or *pink* hue. Hence, whenever you see this sediment red and high-coloured, you generally find the urine very acid; and in proportion as it is paler,—goes through a faint brown and approaches to white,—in that proportion, generally, is the urine less acid. It may even be deficient in the *natural* quantity of acid; and be rather *alkalescent*. The urine, where there is acid, is high-coloured; but when the sediments are pale, and the urine is not acid, then the urine generally is pale also.

Besides the *nitric* acid, *oxalic* acid has been found in the urine, in the form of a sediment; but it is not a *powdery*, but a *crystallized* one; and is in union with the oxalate of lime. Once only has Dr. Prout seen a powdery sediment;—what he calls "an amorphous uncrystallized sediment of oxalate of lime;" and then it was mixed with ammonia. We shall see, with regard to oxalate of lime, that one calculus consists entirely of it; and the tendency to produce oxalic acid, it is said, has been sometimes traced to eating sorrel; which contains that particular acid. But of that I will speak presently.

If you observe the sediments of the urine to be absolutely white, then they are not the lithate of ammonia, but the phosphate of lime, the phosphate of magnesia, or the phosphate of ammonia, or more than one of these. In this state of things,—when there is this absolutely white sediment of the phosphates,—the urine is *not* acid. On the other hand it is *alkaline*,—it is absolutely alkaline; or it becomes so very soon after it is made. It is rare, certainly, for the urine to be quite alkaline. Sometimes the urine is all but alkaline; and it is no sooner passed, than it emits a strong smell of ammonia. The best test for alkalies is not *turmeric*-paper, but *litmus*-paper which has been exposed to acid. Reddened litmus-paper is the most delicate test; for the smallest quantity of alkali brings back the purple hue. When the sediments are white, and depend upon the phosphates, the urine differs, in other particulars, from the urine made when the sediment depends upon the lithate of ammonia. The urine, instead of being high-coloured, is pale,—with a faint greenish hue; and, instead of being scanty,—as is the case with *acid* urine,—it is generally abundant; and very soon after it is made, it undergoes such a high degree of decomposition, that it becomes very offensive, and smells of ammonia. Still there is one exception to this; and that is, when lithate of soda has been deposited. I have had one

case of this description; and, I suppose, others have had many. There was a white sediment in the urine; but it did not depend upon the phosphates; and therefore the quality of the urine was like that which is seen when there is *red* sediment. The lithate of soda, if not coloured by the purpurates, is perfectly white. It so happened, in this case, that the lithate of soda was deposited pure; but as it was not a phosphate, the urine was not of that quality which occurs when the phosphates are deposited. It was not abundant, but scanty; it was not alkaline soon after it was made, but acid; for it tinged litmus-paper red. One set of sediments consists of lithates deposited in abundance; and they are generally tinged with the purpurates. Another set are always white; and they are phosphates. In one set we have *acid* urine, in the other *alkaline*; namely, where there is an alkaline phosphatic disposition. In one set the urine is *scanty*, in the other it is *abundant*; in one it is *high-coloured*, in the other it is *pale*, and frequently of a reddish hue. If it so happen that the purpurates are not formed, you may have a pure lithate of ammonia; and the deposit will then be *white*;—just as if it were ammonia.

This opposite state of the urine where the phosphates are deposited,—where the urine is abundant, and is disposed to alkalescency,—does not shew an inflammatory state. The *other* secretion of urine shews an inflammatory condition; but this,—where the urine is abundant, is alkalescent, and does not stain litmus-paper,—is connected with an irritable state of the system,—a state of debility. However, these very states run into each other. You will have persons passing one description of urine, with one kind of sediment, and then the other, alternately; and you will have persons verging from one to the other;—so that there is no certainty. Persons are in a sort of mixed transition-state; where matters are much confused. Most probably, they begin with acid urine, and the lithic deposits; and yet they are actually passing into the other condition, which is the worst state of the two. The sediments are sometimes seen to be mixed. You have occasionally, in the sediment, lithic acid, the lithates, and the phosphates also at the same time;—so that the whole state of the patient may be one of transition. You will sometimes find that these conditions alternate; so that you may be very much puzzled, perhaps, in the treatment of the case.

Where the urine is abundant, pale, green, and alkalescent, and the phosphates are deposited, it is observed also that urea is in great abundance; but Dr. Prout considers that it is imperfectly formed;—that it is the urea which gives rise to the abundance of ammonia. The way in which this operates he conceives to be the following. In these cases the urea is secreted in abundance. Urea, you know, is a compound; and being badly formed, it undergoes some change, and affords ammonia. As there is not a correspondent quantity of phosphoric acid, this ammonia precipitates the lime; and then, by uniting with the phosphate of magnesia, a triple salt is formed; which salt is called the *ammoniaco-magnesian phosphate*. This is, of course, a phosphatic sediment; and you may easily know this triple sediment, by its

white glistening particles. You see why the urine, in these cases, is alkalescent. It is because there is such an abundance of imperfect urea,—giving rise to so much ammonia. However, though the abundance of ammonia, from the diseased urea, may be the cause of the deposition of this phosphatic sediment, yet the same effect will be produced from a deficiency of acid in the urine. If there be not sufficient phosphoric and sulphuric acid, the lime will be precipitated; and not only the lime, but likewise the ammonia and magnesia; —so that you have the ammoniaco-magnesian phosphate. Sometimes it is said that an excess of lime is the cause of the mischief. That, however is rare.

Thus you see that the urine may err through an *excess* of acid, of one kind or other; it is generally from nitric; or it may err from a *deficiency* of the acids.

The sediments are sometimes mere powders (called *amorphous*); but sometimes the matters deposited are in a crystalline state. In the latter case they may, in the first place, be red. These red, granular, crystallized sediments (called "crystallized" to distinguish them from powdery ones) are spiculated crystals. You may see them in the urine. There will frequently be red crystals, with numerous spiculæ, at the bottom of the vessel. Some of them, by chance, may be swimming; and some may be sticking at the sides. These are very nearly pure lithic acid. From the great quantity of nitric acid, most probably, the lithic acid is precipitated. Sometimes the lithic acid is absolutely in excess, so that it is not held in solution; and therefore crystals are deposited. But this is not necessarily the case. If you take urine, and add acid to it, the lithic acid will be precipitated; and therefore when you see a crystallized red sediment, with spiculæ, you know that it is nearly pure lithic acid; but it may arise either from the lithic acid being too abundant, or from some acid being present in the urine,—so as to cause precipitation. The *phosphoric* acid will sometimes do this, and sometimes the *sulphuric*; but frequently it is *muriatic* acid; and sometimes it is even said to be *carbonic* acid. It must be a *weak* acid, or an acid of little strength, to precipitate the lithic acid; because any *strong* acid will produce decomposition. The urine,—when you see this spiculated, crystallized, red sediment,—is usually very transparent; and of a fine, reddish colour.

If the crystallized sediment be *white*, it is usually the triple phosphate of magnesia and ammonia; and is called the "ammoniaco-magnesian phosphate. The urine, in this case, is just the same as if the sediment had been in powder. It is alkalescent, abundant, pale, and greenish; and soon becomes ammoniacal, and undergoes decomposition. You may have crystals consisting of oxalate of lime; and then the crystals are of a dark *green* colour; and the urine is found to be acid. But this is a very rare occurrence; and one which I have never seen. The *crystallized* deposits are said never to be found together; while the *powdery* concretions (the *amorphous* deposits) sometimes are.

URINARY CALCULI.

If it happen that the crystals just described are larger, or that more solid matter is heaped together, we give to them the name of *concretions*. It is merely the same thing on a large scale;—perhaps the union of several of these, deposit over deposit; and a great quantity of solid matter. You may be prepared to understand these concretions, from what I have now said respecting sediments;—both powdery, amorphous, and crystalline.

In the first place, we have a concretion which is merely *lithic acid*; and is of a brownish red or fawn colour. Concretions of this kind are sometimes smooth; but sometimes they are tuberculated, rather rough. If you divide them, you find that they consist of concentric laminæ within. If they are broken, instead of being divided with the saw, the fracture is imperfectly crystallized, and of a deep fawn-colour, like the rest. Sometimes they are not in concentric laminæ; but form an amorphous irregular mass, of a pale colour; but when they are pale, they are generally mixed with a little phosphate of lime, or even a little *oxalate*. If you take this calculus, and apply heat to it, it becomes white, and burns away; leaving a minute quantity of white ash, which is generally alkaline. This calculus is quite soluble in potash; and you may precipitate it again by any acid. It descends in the form of a white powder. If you add nitric acid as well as apply the heat, it is dissolved; and, on drying it, you have a fine carmine-colour, which is erythric acid. I before stated, that when *nitric* acid is added to *lithic* acid, a fine scarlet colour is produced; and therefore if you take such a calculus as this, and add strong nitric acid to it, you will have a red colour.

But this calculus is rarely found pure. It is generally mixed with the *lithate of ammonia*; and it is then clay-coloured;—rather paler than the other. It has, however, the same general character. It is sometimes smooth, and sometimes tuberculated; sometimes it has concentric plates, and sometimes it is an amorphous irregular mass; but it is more rarely found in the latter state, than the calculus of pure lithic acid. The most common calculus of this description, is one,—not of pure lithic acid, nor of pure lithate of ammonia,—but a mixture of both; and therefore, whenever you see a calculus of the description I have now mentioned, you cannot say whether the ingredients consist of one or the other; for, in nine cases out of ten, it will be found to be a mixture of both. If lithate of ammonia exist in it, or if it be pure lithate of ammonia, it decrepitates by heat; and if you add potash with the heat, you soon have ammonia given off. It is soluble in the alkaline subcarbonates; whereas a pure lithic acid calculus is not; and therefore you may easily distinguish the one from the other, by chemical means. A calculus, consisting of pure lithate of ammonia, occurs generally before puberty. It is small, and rather uncommon. The most usual thing is to have lithic acid and lithate of ammonia, mixed together. The lithate-of-ammonia calculus is not only continually found mixed with lithic acid, but it is often mixed with oxalate of lime.

The next calculus which is found in acid urine, is *oxalate of lime.* This, for the most part, is very easily known. It is a brown rough calculus, exceedingly hard; and generally exceedingly rugged. From its irregularity on the surface, it is called "a *mulberry*-calculus." Sometimes it is nearly black. If you apply heat to it, a white efflorescence appears upon it. Oxalate of lime no longer remains, but *pure* lime; and this, being alkaline, will stain tumeric-paper. Occasionally this calculus has been found smooth; but it must be of a very small size indeed to be smooth. Generally it is a most formidable-looking calculus;—such as would make one shudder, when you remembered it is formed in the human bladder. It is known by its ruggedness and dark colour.

There is another calculus which exists with acid urine; and it is called *cystic oxide.* It is so very rare that, perhaps, you will never meet with it; but I will describe it. It is of a yellowish-white colour, and smooth externally. Internally, it is a confused, crystalline, glistening mass. In point of size, it is small. If heat be applied, a peculiar odour is emitted; and it is soluble both in acids and in alkalies.

We now pass to the consideration of other calculi; which exist with urine generally deficient in *acidity,* and sometimes bordering very closely on *alkalescency.* These are the phosphates; and the first of which I will speak, is the *phosphate-of-lime* calculus. This is of a pale brown, or of a white colour. It is very smooth and polished; it has regular laminæ, which are very separable from each other. It is rare and small; and it is thought, by Dr. Prout, not to be a true urinary calculus; but to be formed in the prostate gland. It is not fusible by the heat of a blow-pipe; and when you dissolve it, you may precipitate it again. Although this is not dissolvable by heat, yet you may dissolve it in muriatic acid.

We have another phosphate which, unfortunately, is very common. You may know it in a moment. It is the *triple phosphate*;—consisting of phosphoric acid, magnesia, and ammonia. It is white; has no laminæ; and is easily pulverized or broken. This calculus consists of the same substance as the white sand I mentioned. It glistens; and consists of a number of minute, white, sparkling crystals. The surface is uneven;—being covered with minute asperities. If you apply heat or potash to this calculus, ammonia escapes; and therefore your chemical knowledge will enable you to say what it is. If you apply intense heat to it, it will at last melt; but this is effected with great difficulty. It is more soluble in acids, than the phosphate of lime; and you may precipitate it again, in the form of minute shining crystals. In consequence of the addition of ammonia, it is called a *triple* phosphate.

We have another calculus which is very common; but not quite so common as the last of which I spoke. This is a compound of the last calculus with the last but one;—consisting of phosphate of lime, united with the phosphates of magnesia and ammonia. It passes under the name of the *fusible* calculus; because it so easily melts

under the blowpipe. You may know this calculus in a moment, by its breaking under your fingers,—like so much chalk. If you rub it on your sleeve, the coat is immediately dirtied,—as it would be by chalk. It is exceedingly white and very friable. Generally, it is not laminated,—not in plates; but if it be separable into laminæ, you generally find the triple phosphates between the laminæ, in the form of shining crystals. When it is not laminated at all, but is a mass like chalk, it sometimes attains a very large size. It is very soluble in the acids;—particularly diluted *muriatic* acid. It is a calculus which frequently gives the surgeon a good deal of trouble,—coming to pieces when he applies the forceps;—just as any mass of chalk would do. You may easily separate the lime from this calculus. By adding oxalate of ammonia, the lime goes to the bottom; and then, again, the magnesia may be separated by adding pure ammonia.

However, we do not often have this calculus in a form so simple as that I have now mentioned; but, very frequently indeed, we have what is called an *alternating* calculus; that is, a calculus consisting of these various substances in different layers. In by far the greater number of these cases, you will find that the *inner* substances are those which I first mentioned;—lithic acid, or (more properly speaking) a compound of lithic acid and ammonia, or oxalate of lime; and then, in the outer part, you find the phosphates. The layers of these alternating calculi may be very various; but the nucleus,—the internal portion, generally consists of lithic acid, or oxalate of lime. When a patient has a "mulberry-calculus," nature at last throws the phosphates around it. It becomes white externally, and loses a great portion of its roughness; so that the patient does not suffer so much as before. The external crust generally consists of a "fusible calculus." Sometimes you have laminæ of all the three ingredients; but still the external crusts generally consist of the phosphates. When calculi are thickened in this way, they are often very large. As to the *chemical* qualities, they depend upon the layer you examine. If you inspect the *outer* layer, you find all the characters of the phosphates; and *within* there are all the characters of lithic acid and lithate of ammonia.

Then, again, we have another compound calculus; in which the materials, instead of being in alternating layers, are all mixed together. A mass of this kind generally consists of lithate of ammonia and the phosphates; and, of course, the colour will vary with the composition. Accordingly as lithic acid predominates, or the phosphates, so will the calculus incline to a *clay* colour, or to a *white* colour; and the proportions are quite indeterminable. A *mixed* calculus, of this description, is generally very hard;—seldom laminated, and seldom large. There is another calculus, called the *carbonate of lime* calculus; because it consists of pure carbonate of lime. It is very rare, and very friable. It has all the characters of chalk; and effervesces with the acids.

Then there is an eleventh calculus; which is so very rare, that it

has been seen only once. It is called *xanthic oxide*. The substance of this is very peculiar. By the addition of nitric acid it becomes yellow.

There are some concretions of the bladder, which have turned out to be nothing more than fibrin.

PROSTATIC CALCULUS.

Besides these *vesical* calculi, we have calculi in the prostate gland. They are found in two situations;—first, in the *natural cavities* of the gland; and then they are of a yellowish brown colour, and more or less round and small. Sometimes, I believe, these come from the kidney. I have passed thousands of these at different times;—about the size of pins' heads. I have collected some, and shewn them to Dr. Prout; who says they came from the prostate. But calculi are sometimes found in an *abscess* of the prostate; and these are much larger and highly polished. They are chiefly phosphate of lime; and Dr. Prout believes that the phosphate-of-lime calculus, found in the bladder, is in reality a *prostatic* calculus.

CALCULOUS DIATHESES.

It appears that there are four elementary kinds of calculi, and four distinct calculous dispositions; to which dispositions Dr. Prout gives the name of *diatheses* (from διατιθημι, *to dispose*). In the first place, there is the diathesis to form *lithic acid*, its compound (lithate of ammonia), and a mixture of the two. Now this is the most common calculus we have. Nearly all the calculi taken from children, if they have not been allowed to remain long, consist of lithic acid, or its compounds, or a mixture of the two; and in the majority of calculi taken from people, of whatever age, you find that it forms the nucleus within. Then there is a disposition to produce *oxalate of lime*; and that appears to be a distinct diathesis. Then there is a disposition to form *cystic oxide*; but this is very rare. Then there is a disposition to form the various *phosphates* which I have mentioned. This last succeeds to the others. It is usually after the three first diatheses have ceased, that the disposition to form the phosphates comes on.

So common is the disposition to produce the *lithic-acid* calculus, that it is said to predominate in rather more than one-third of all the calculi that are examined; and it is by far the most frequent nucleus of all calculi. At least two-thirds originate from it in the first instance. Those which are of a deep fawn-colour, are well laminated, and have quite a crystalline fracture, are nearly pure lithic acid; in fact, it is red crystallized gravel. If, with this diathesis, the calculus is of a pale-brown or clay-colour, with an earthy fracture, then it is a compound of lithic acid and ammonia; and generally there is a little mixture of the phosphates, and even a little oxalate of lime; and the more there is of the phosphates and the lithate of ammonia, instead of lithic acid, the paler the calculus becomes. The rarest of these calculi is the pure *lithate of ammonia*. The "*mul-*

berry calculus" is found to *constitute* rather less than one-*seventh* of all the calculi which are examined; but it is *contained* in about one-*fourth* of all the calculi that occur. As to the *cystic-oxide* calculus, so rare is it that, of two hundred and seventy-four calculi which were examined, only one was found to be of this description; and in three collections out of five, none were found. The *phosphates* constitute about one-fourth of the calculi; and one-half of this one-fourth are the *mixed* phosphates;—that is to say, a mixture of the different phosphates. But this estimate of one-fourth is not very accurate; and for this reason;—it has been taken from the *external* appearance of the calculi; whereas, if these had all been sawn through, it is most likely that, *within*, a number of other ingredients would have appeared. The *alternating* calculi (those which consist of a layer of different substances,—the lithate of ammonia, the oxalate of lime, and the phosphates alternately) form a very large proportion. In these alternating calculi, we sometimes see lithic acid and its compounds externally; and perhaps a foreign body for a nucleus. We see, *within*, alternations of lithic acid and its compounds, and a mulberry-calculus *without*;—that is very common. We see alternations of lithic acid within, and the phosphates without. We see alternations of the lithic-acid calculus within, then the "mulberry-calculus," and the phosphates without. Again, we see alternations of the "mulberry-calculus" within, and lithic acid and the phosphates without. When, however, these alternating calculi are found, the phosphates exist externally; and therefore it appears that the disposition to form phosphatic calculi, does not precede the disposition to form lithic acid calculi, or oxalate of lime. It appears that the disposition to form the phosphates, either takes place originally, or follows the disposition to form the oxalate of lime, or lithic-acid calculus; but it is not succeeded by any other diathesis. This very interesting and very remarkable fact, was noticed by Sir Gilbert Blane, in 1811; in a paper published in the "Transactions of a Society for the Diffusion of Useful Knowledge." He states that lithic acid is generally the nucleus in calculi; and that the other dispositions are merely the result of irritation. I am not aware that this statement of Sir G. Blane's was attended to for some time; but it has now, by very extensive observations, been proved to be correct. Dr. Prout says, that he never met with one patient in whom the phosphatic disposition was decidedly followed by any other. It usually occurs when irritation takes place.

The disposition to form lithic acid, evidently appears to reside in the *kidney*; for these calculi are seen in that organ. Indeed, there is no reason whatever for believing that this description of calculus is formed in the *bladder*. It appears to be truly a *renal* calculus. If this diathesis be not very intense, you have merely an amorphous sediment;—such as we all have, at times; and if it be not very abundant, there is no danger. Some people frighten themselves about it; but, unless the quantity be very great, there is no occasion for alarm;—especially if the sediment does not appear when the urine

is first made. If it be so abundant as to be deposited before the urine cools,—if it come from the bladder in the form of powder, then there may be danger; and if it not only occurs when the urine is first made, and is warm, but takes place constantly, then, I believe, the individual is almost sure at last to have gravel or stone;—that is to say, he will pass concretions; or have a concretion so large, that it will not pass. With respect to the lithic-acid sediment, there is more danger in proportion as it becomes paler. When it is of a bright *red* colour, there is not much occasion for alarm; but when it is *white*, there is some degree of danger; because it shews a disposition to deposit the phosphates. I do not say that it *always* shews danger; because occasionally, when it is white, it is merely lithate of ammonia; and it is white because it is not tinged with the colouring matter, in the way I mentioned before. Very frequently, however, the intensity of it arises from the phosphates being deposited; and when that is the case, there is considerable danger.

Some people pass, not merely a powdery sediment, but a mixture of amorphous and crystallized sediment. Some people will even pass crystals with very little irritation; but if irritation be produced by the sediment, then there is generally a mixture of amorphous and crystallized sediment; and when the irritation is very great, it is generally because a large quantity is passed in both these forms. In these circumstances, there is generally more or less pain in the kidney; irritation about the neck of the bladder; a frequent desire to make water; and more or less feverishness. The urine is acid and scanty; it has a high specific gravity. You will find persons complain of these symptoms, from time to time; and then they will discharge a large quantity of red or reddish sediment. The urine is very acid; and you should always test it. This state of things frequently comes on in persons who have a calculus already in the bladder. Sometimes a calculus is formed in the kidney, and may remain there; and give the patient no trouble. A person may have a stone formed in the kidney, without being aware of it; and you may be surprised to find it there after death. Sometimes it will only cause an aching pain in the loins; and will not shorten life. But occasionally these calculi produce very great mischief. No doubt they continually pass in the form of minute concretions; and the patient is not at all aware of it; and they will lodge in the bladder, and there grow to the size of which they are found. Sometimes they pass from the kidney, after having obtained a size so large as to give great pain, as they pass through the ureter. From their attempt to leave the kidney, there is pain in the back, attended with vomiting; and perhaps you have a great degree of feverishness. Inflammation may be set up, or it may not; and then, after a time, all these symptoms cease, perhaps suddenly; and in a day or two, if the stone be very large, you have signs of a calculus in the bladder.

The infundibula of the kidney are sometimes filled with these calculi. You will see them sticking there; and sometimes the kidney will become blocked up with them. The pelvis is sometimes filled

with them; the infundibula become greatly distended; and sometimes the ureter is blocked up with them;—so that the pelvis of the kidney is distended into a mere bag. It is said that, in the Museum of the College of Surgeons, there is a calculus, weighing seven ounces and a half, which was taken from a kidney, and which caused no symptoms during life. This is analogous to what I stated with regard to the gall-bladder; where a large number of stones will sometimes exist, without being productive of any symptoms. These lithic-acid calculi are continually found in the kidney; and are of all sizes. It is probable that, in all the instances where they are found in the bladder, they have descended from the kidney.

Lithic-acid calculi (using the term generically) sometimes occur in great numbers. No fewer than two thousand have been voided, by one individual, in the space of two years; and one hundred and twenty have been known to come away in three days. It is the calculus which, of all, gives the least irritation. Children and dyspeptic individuals are most subject to that state of body, in which there is a disposition to form these calculi. The disposition appears to be less between puberty and forty years of age, than before. There is certainly sometimes an hereditary tendency to it; for it occurs in members of the same family,—descendants of each other. It is said to have occurred frequently in those who have cutaneous complaints; but cutaneous diseases are so very common, that I do not know whether the examples are sufficiently numerous, to authorize us in supposing that there is any connexion between the two. Something appears to depend upon local situation; for some places are remarkable for the abundance of persons with this sort of calculus; but it is not known in what the peculiarity consists. Undoubtedly there is some connexion with a gouty disposition. Persons disposed to gout, frequently become the subjects of this sort of calculus, and this kind of deposition in the urine. Excess in eating or drinking, is always mentioned among the causes; and so likewise is indolence.

As to the *treatment* of the disposition to form this calculus, and this kind of sediment, it consists in antiphlogistic measures; for this state of body is certainly, for the most part, inflammatory. An individual so circumstanced, should take very little animal food;—sometimes, perhaps, none at all. In many cases, the latter restriction may be necessary. At any rate, animal food should be taken in great moderation; and equal moderation is required in eating altogether. In general, it is necessary to abstain from wine, spirits, and strong malt-liquors; though *mild* malt-liquors may be admissible. It is not merely necessary to abstain from Rhenish wine and claret; but from all strong wines, and every thing that is sour. It is necessary to avoid vinegar, sorrel, oranges, and lemons;—in short, every thing that is acid. It is likewise necessary that the patient should be moderate in the exercise he takes; and that he should keep an open state of the bowels. With regard to *medicine*, colchicum is found to be beneficial; together with light preparations of mercury;—mercury in a moderate quantity;—so as not to debilitate the frame; but

to keep down, as much as possible, an inflammatory condition. In connexion with colchicum and mercury, neutral salts will be very proper. Alkalies are advisable here,—particularly magnesia;—both on account of its being an alkali, and from the tendency it has to open the bowels. A saline draught is an excellent mode of giving an alkali; because, although you thus give a neutral salt, yet it contains a vegetable acid; and that is always decomposed within, so that you have the benefit of the alkali which was combined with it. For this fact we are indebted to Sir Gilbert Blane. He was the first who pointed out the impropriety of giving saline draughts, where an alkali was not required; and the advantage attendant upon their exhibition when it was. Dr. Prout, and others who are best able to give an opinion upon it, declare that this is the case; and they frequently give a saline draught, for the purpose of administering an alkali. It is judged advisable, in these cases, to take care that the water which the patient drinks be not hard,—does not contain salts or lime; although water, for the most part, is one of the best beverages which people, in these circumstances, can take. I stated that neutral salts should be given from time to time. By neutral salts, I mean tartrate of potash, and the like. Patients, in this condition, sometimes find great relief from the abundant discharge of lithic acid. You will sometimes hear patients say, that they have discharged a quantity of powder, like fuller's-earth. It is certainly true that, in this state, a vast secretion of lithic acid, or lithate of ammonia, occasionally takes place in the kidney; and then the irritation is altogether relieved. It comes on in fits;—just like the gout.

Some have attempted to bring on a secretion of this earth, by artificial means. For this purpose, some give turpentine and opium, in small doses; and some give onions and leeks steeped in gin, wild carrot, and other herbs. Dr. Prout says, that he has seen great benefit produced by these substances. I mentioned when speaking of diabetes, that opium has undoubtedly the power of increasing the quantity of lithic acid; and therefore it has been employed where a copious discharge of lithic acid was required all at once;—a *liberation*, if I may so say, of the sediment. But a purgative should be given in conjunction with the opium; because, although the latter may do partial good by exciting a discharge of lithic acid, yet it may do harm, by confining the bowels;—to which state they are much disposed. In such a case as this, if the patient be very bad indeed,—if he have violent pain in the kidney, great feverishness, pain down the ureter, and about the neck of the bladder,—you must treat it as nephritis and cystitis; particularly by cupping him on the loins. You will find it serviceable to put him in a hot-bath, to purge him well, and to give him colchicum, alkalies, and opium.

In cases where the disposition is to form *oxalate-of-lime*, or "mulberry-calculi," the urine is likewise acid. A state of the system, similar to that last described, takes place; and a similar mode of treatment is required. The "mulberry-calculus," like the lithic acid, occurs in both sexes; and at all ages up to fifty. It is about

fifty that it is most frequently seen; but it is, I believe, never formed after sixty years of age. The lithic-acid calculus and its compounds, occur in persons who are very dyspeptic; and who are disposed to be feverish and irritable; but the oxalate of lime, or the "mulberry-calculus," is continually produced in persons who have nothing else the matter with them; and when produced, it may be discharged. The lithic-acid calculus and its compounds (as I stated) have been formed to the amount of two thousand in one individual;—of course, of all sizes; but the oxalate-of-lime or "mulberry-calculus," seldom occurs more than once in a patient's life; or if it does return,—that is to say, if another be produced,—it is generally after a very long interval. The urine, in this state of things, is pretty good, and remarkably clear. The *amorphous* sediment of the oxalate-of-lime, is a very rare thing indeed; and as to the *crystallized* sediment of oxalate of lime, that is still more rare. A calculus of this description, often acquires an immense size in the bladder, and it does not appear to be produced accidentally. The lithic-acid or phosphatic calculus, will be produced accidentally;—when there is a clot of blood, or a foreign substance has been introduced into the bladder; but this depends upon a peculiar state of the system, which is not understood;—a peculiar diathesis, which appears unconnected with external circumstances. It sometimes *follows* the deposit of a lithic-acid calculus, and is sometimes *succeeded* by it; but nothing is more common than to find it alone. It sometimes happens, that oxalic acid ceases to be formed; and lithic acid is produced in abundance; and then the deposition in the external part of the calculus is lithate of ammonia, instead of oxalate of lime. I have myself known several persons discharge a calculus of this kind. They have been perfectly well; but have suddenly been seized with violent pain in the kidney; which has continued some days,—perhaps only for some hours, and sometimes only a few *minutes*. The pain has shot down towards the bladder, and then ceased; and after a few days, in passing their urine, they have been surprised by something making a noise in the *pot-de-chambre*. Sometimes there has been violent irritation; with all the ordinary symptoms of a stone in the bladder. The stone has escaped; and then they have been perfectly well, and have had no return. I know several persons, in whom this happened many years ago; and who, ever since, have been in perfect health.

The *treatment* here, as the urine is acid, is exactly the same as for the lithic-acid diathesis;—that is to say, if there be any inflammatory state of the system, you must suppress it by the ordinary antiphlogistic means. If no inflammatory state can be discovered, still you must put the patient on an antiphlogistic plan. Dr. Prout suggests the propriety of changing the *oxalic*-acid diathesis for that of the *lithic*-acid, by exhibiting muriatic acid. If you give acids, lithic-acid is produced; and he says you should endeavour to produce the lithic-acid diathesis; which, he states, may be done by muriatic acid. It is merely a suggestion; and I do not know that it is founded upon practical experience.

As to the *cystic-oxide* diathesis, the calculus itself is very peculiar; and the state of the body in which it is formed, is not known. It is generally supposed that this calculus originates in the kidney. The *treatment* of the case, would depend upon the circumstance of the urine being *acid* or being *alkaline*. If it be acid, you must treat it in the way I have mentioned; if it be alkaline, then you must treat it as I shall hereafter mention. Dr. Prout thinks that, in this diathesis, the prognosis is unfavourable; for, in most instances, the kidney has been found diseased; and, in others, there has been an inveterate hereditary tendency to disease of the urinary organs. It appears to be a very exclusive diathesis; for it is found with no other deposition in the urine. There is no other calculous matter *within* this, as a nucleus, or *without* it;—except the phosphates, which are the effect of irritation. The calculus is sometimes incrusted with the phosphates; but that is the result of mere irritation,—not of a disposition to disease.

We have now to consider a far worse state of the system;—that in which the *phosphates* are deposited; and which has been called "the *phosphatic*" or "the *earthy* diathesis." Here everything is the reverse of what I stated to be the case, where the tendency is to a lithic-acid or oxalate-of-lime calculus. The urine is not scanty and high-coloured, but copious and pale; and often it is greenish. On looking at the urine, you may tell what is the state of the parts. You may say that the individual has a phosphatic calculus in the bladder, or is depositing phosphatic sediment. The urine is of lower specific gravity, than in the cases I have already considered; and lower than it is naturally. It is in these cases that the urine very soon putrefies. Sometimes you cannot keep it a day before it is quite putrid;—smelling strongly of ammonia. Frequently, at the top of it, you have an irridescent and white pellicle; which consists of the phosphates, with (I presume) a little mucus. The sediment may be either pulverulent or amorphous;—being a mixture of the phosphate of lime and triple phosphates; or it is crystallized; and then you have the triple phosphates only,—in white glistening crystals. You know that the two chief calculi found in the bladder, are the triple phosphate (the ammoniaco-magnesian phosphate), and that with a mixture of the phosphate of lime; and in that case it is white, is not crystallized, is friable, leaves a white mark on anything it is rubbed against, and is very fusible.

This phosphatic disposition, and these phosphatic concretions, are very rarely original. They generally occur subsequently to the formation of other calculi; and subsequently, in general, to the lithic-acid or oxalate-of-lime diathesis. The way in which it usually takes place, is this;—the red sediment becomes a fainter red; and, from the phosphates being more and more formed, it becomes paler and paler, till you have a clay-colour; and then, at last, the phosphates only are formed;—the lithic acid and lithate of ammonia being no longer deposited. The urine then becomes more abundant,—does not shew such strong signs of acidity; and, at last, there is no acidity

whatever. On the contrary, perhaps, it is even alkalescent; though that is rare when it is first made. Ultimately, however, (as I have already said), it very soon putrifies; and in that case it is very alkalescent;—affecting turmeric-paper a short time after it is voided, and depositing spiculæ of the triple phosphates.

The two sediments of the phosphates,—the sparkling glistening crystals, and that in which there are no glistening crystals, but with which the phosphate of lime is mixed,—sometimes alternate. The same individual will, for a day, or a week, or perhaps a fortnight, deposit glistening crystals of the triple phosphates; and then, at other times, those which do not glisten at all; and sometimes the latter alternate with lithic acid; but then the lithic acid is very pale, —verging to the phosphates; and sometimes, before it gives way to them, there is an alternation of the two. If there be a great deal of crystallized phosphate, then the urine is very alkalescent. The urea is very copious; and crystals are sometimes formed, before the urine is discharged from the bladder. This deposition usually takes place after the urine is made; but, in bad cases, it will take place before it is voided; and the instant the urine is made, the deposition subsides to the bottom of the vessel.

In the second phosphatic sediment,—that in which there is a mixture of the triple phosphates and the phosphate of lime,—although the symptoms are similar, as well as the state of the urine, yet they are both far worse than in the first state. In this condition of the body there is no inflammatory state. There are no marks of inflammation; but there is a morbid irritability. There is a bad expression of countenance;—shewing distress,—shewing something wrong in the system. The patient is generally sallow and languid; and experiences pain in the loins. There is generally more or less dyspepsia, and some abdominal derangement. Very frequently, there is a want of sexual power and desire; and when a person complains of that, it is always right to examine the urine. In many cases, you will find diabetes; in many others, you will find an excess of urea; and in others, again, you will find, not only an excess of urea, but likewise a deposition of the triple phosphates. The urine will vary on different days, and at different times on the same day;—being at times copious, and at others less so.

Many of these cases have arisen from an injury of the loins; and they arise, too, from the depressing passions,—from anything that exhausts the vital powers. In some instances, they appear to have arisen from masturbation, or from excessive venery. Any local irritation, whether in the bladder or in the urethra, will produce them; and therefore this diathesis is rarely found in the kidneys. You will generally find no marks of disease in the kidney; but usually in the bladder. When a lithic-acid calculus descends to the bladder, it usually produces irritation; and then the phosphates are produced. The bladder is often diseased, from various causes; and frequently it is inflamed;—so that these calculi appear to be far more frequently formed in the *bladder*, than anywhere else. They have been formed

from an irritation in the urethra, reaching to the bladder; but generally it is an irritation of the bladder itself that produces them. Urine having this deposition, has continually been seen after an injury to the spine. After these injuries, therefore, and in disease of the spine independent of mechanical violence, surgeons expect to find such urine; and, on examination, they generally do. Stricture of the urethra will induce this description of urine. It seems not only to act by irritating the *bladder*, but it also affects the *kidneys*;—causing them to give origin to urine imperfectly acidified. Great irritation,—whether it occurs in the bladder or in the urethra,—gives a tendency in the kidneys to produce urine with a deficiency of acid; and if it be deficient of acid, the phosphates are usually deposited in the way I before mentioned;—from the decomposition of the urea, and the production of other things.

In this diathesis, you must not keep the patient low, and bleed him. On the contrary, you must give him meat, if he will bear it; and even allow malt-liquors. Although, perhaps, wine may, in general, be too irritating, yet acescent wine is good. The tendency is to alkalescency; and, if it do not disagree with the stomach and intestines, wine should be taken. Acids themselves are proper;—especially *citric* and *muriatic* acid. Mercury acts here as a poison. If you give mercury, in nine cases out of ten you will find the urine become more alkalescent, the patient's pulse will become irritable, and all the symptoms about the urinary organs will be aggravated. Opium is required freely,—in order to lessen the irritation. The sulphate of quinine, or a decoction of bark, has been exhibited with the greatest advantage; and iron is frequently useful, though occasionally it is too stimulating. These things must be exhibited with regard to individual cases, as well as on general principles. Saline purgatives, of whatever kind, are improper; for as they consist of an alkaline earth and a vegetable acid, and the latter is decomposed in the system, you are actually giving an alkali; which makes things worse. Saline substances produce great irritation;—such as cannot be borne. It is best to give mild aperients (such as confectio senna, and castor oil), in moderate doses; so as not to irritate, but merely to prevent an accumulation in the intestines. A small quantity of muriatic acid will be found sufficient;—five drops will produce a specific action on the urine; but ten or twenty may sometimes be required. Instead of bleeding and mercury, opium is the great remedy here. You will find no difficulty in ascertaining whether one particular treatment is proper or not; for the state of the urine will always determine that point. It is always right to employ litmus-paper, stained red; for, in proportion as the urine is alkalescent, it will restore the original colour; and (as I mentioned before) it constitutes a far more delicate test than turmeric-paper.

It is the state of the urine which determines all the treatment. Whether there are signs of a calculus in the kidney or not,—whether there are signs of a calculus in the *bladder* or not,—whether there are any of the sediments which I have now mentioned or not,—

whether the person is going to be lithotomized, or has been already submitted to that operation,—the urine should be carefully examined; for you have to treat the case in all these circumstances. Where a calculus has been removed, you still have to remedy the condition of the system which gave rise to it; because that condition does not cease on the extraction of the stone. You should examine the urine which is passed first in the morning; because that is the least liable to be influenced by accidental circumstances, and therefore the most likely to shew the actual state of the system. It should be put away for twenty-four hours;—in order that you may make a perfect examination. In many cases, you may ascertain the point immediately; but the urine should be allowed to remain and cool; and the sediment, if there be any formed, will then be deposited. This kind of treatment is continually required after lithotomy, or the removal of stones in any other way; and, from the want of making a careful distinction,—from the habit of giving alkalies when there is any thing the matter with the urinary organs, infinite mischief is done. It is far better for nothing to be done, than to do something wrong; and mistakes, till very lately, were made every day,—almost every hour, in the treatment of these cases.

LITHIASIS.

Supposing that there is a stone in the bladder,—an affection which is called *lithiasis* (from λιθος, *a stone*),—the symptoms that are produced are usually a particular pain at the end of the penis;—a pain which the patient describes as a *benumbing* pain, and which is increased upon exertion. This pain makes the patient pinch the penis as hard as he can; and if he feel a sudden call to make water, he usually puts his hand to the end of the penis; and children are in the habit of pulling the prepuce. There is a frequent desire to make water, and the stream suddenly stops;—the desire to make water, however, being still urgent. Sometimes a change of posture will cause the urine to flow again. Sometimes the urine, instead of suddenly stopping, will come away drop by drop;—the discharge being attended with great pain, and perhaps with blood. There is pain in the bladder itself, especially on motion; and likewise pain and tenesmus on evacuating the intestines. If the calculus be large, or very rough, there is pain in the neck of the bladder, pain and numbness of the testis of the same side, and pain of the inner part of the thigh, along the course of the anterior crural nerve, and sometimes down to the foot, so that there is actually pain in the sole of the foot. All these symptoms are rendered worse by exercise.

Pain at the end of the penis, pain increased on motion, and increased whenever the desire to make water comes on, a frequent desire to pass urine, a voiding of it drop by drop, tenesmus, and the presence of blood in the urine,—all these symptoms may occur when there is no stone whatever. In the course of my life I have had every one of these symptoms two or three times over, from mere inflammation about the neck of the bladder. The sudden stoppage

of the stream, is the sign most to be depended upon. Disease of the prostate, and inflammation at the neck of the bladder, will cause many of the other symptoms. Dr. Heberden says that the pain on voiding the urine is felt *after* making water, in the case of *stone in the bladder*; and worse *before* passing it, in the case of *diseased prostate*; and that in the latter case it is not increased on motion. I believe this is a general fact. The obvious reason why the pain is increased on motion, in the case of a stone in the bladder, is this. The stone is moveable, and may therefore come forcibly in contact with different parts of the organ, by motion; whereas the prostate is fixed. However, the prostate is rarely diseased except in the case of old men. Dr. Heberden says, that even pain and swelling of the testes are sometimes observed in disease of the prostate. But you may always ascertain whether the prostate is diseased, by passing your finger up the rectum, and observing whether it is enlarged; and the certain way of ascertaining whether there is a stone in the bladder, is to sound the patient. In the latter case there is frequently secreted a large quantity of ropy mucus; which you may draw out to a considerable length, and which subsides to the bottom of the vessel, in the form of a white tenacious mass. Occasionally, a small fragment of a calculus comes away; and when all the symptoms have become violent,—whatever deposition there formerly was in the urine,—whatever was the diathesis before, it now becomes phosphatic. The urine becomes pale and copious; it loses its acidity, and has great alkalescency; and if there be any deposition at all, it consists of the phosphates. In this state of things, the agony becomes constant; the patient becomes emaciated; and death ensues. The phosphatic diathesis and the sufferings are proportionate to each other. After death, the bladder is found to be diseased. The mucous membrane becomes diseased; the muscular fibres are enlarged; and perhaps even the kidneys are affected.

This state of things may generally be prevented by the removal of the stone by a surgical operation; and sometimes it fortunately ceases, from a sac being formed in the bladder. The muscular fibres give way, and the inner coat protrudes between them. Not that the muscular fibres *rupture*; but the inner coat gets between the bundle of fibres; and you see externally, on one part of the bladder, a small protuberance;—consisting simply of mucous membrane internally, and peritoneum externally. Sometimes, if the calculus be rough, the symptoms are diminished by the deposition of the phosphates. Although the phosphates are in general produced by irritation, yet they fill up the interstices between the prominences of the calculus, and so render it smoother than it was before; and, in this way, the symptoms are sometimes alleviated.

But it is to be remembered that, although a stone *may* produce all these symptoms, yet it does not *necessarily* give rise to them. If the calculus consist of lithic acid, it may be small and quite smooth; and then it may give very little trouble. Indeed, such a calculus has been found after death, when its presence was not at all suspected.

The health is sometimes very good, in such cases; and if the health be fair, and the patient does nothing calculated to injure him, a calculus of that kind may not increase. When a person, on being sounded is known to have a calculus in the bladder, yet it may go on for many years without any increase;—provided he does nothing unfavourable;—that is to say, does not commit any excess,—does not increase the feverishness;—provided he adopts a moderate antiphlogistic plan. Dr. Prout knew a case, in which the presence of a stone in the bladder was ascertained by sounding; and, five or six years afterwards, at the time he mentioned it to me, the patient experienced little or no trouble from it; and frequently, for weeks together, the patient forgot that he had a stone in the bladder, or any thing the matter with him. But the case had been well managed; and the patient had been put on a moderate antiphlogistic regimen,—such as I before mentioned. Dr. Prout also mentioned to me, that he knew a case where four renal calculi existed in the bladder five months, without producing any severe symptoms; and then a little irritation occurred at the neck of the bladder, which led to their removal; and yet one of them was nearly an inch in length. These, however, were lithic-acid calculi. The *oxalate-of-lime* calculus (if it be of any size) causes extreme suffering, and so also does the *phosphatic;* and for them an operation is indispensable. No regimen will answer the purpose here, provided things have not gone so far, that a surgeon would not listen to the operation. Of course, the *nature* of the operation must be determined by the surgeon;—whether it is to be the removal of the stone by cutting, or its reduction within the bladder, or dilatation of the urethra, or any other plan.

You know that, in the case of the male, calculi of really considerable size are sometimes discharged; and instruments have been formed to dilate the urethra;—so as to bring them away without any incision; but these are lithic-acid calculi. Nature very frequently discharges them herself. This occurrence takes place far more frequently in the *female,* however, than in the *male*; and much larger calculi have been brought away, both by nature and by artificial dilatation. One which weighed as much as twelve ounces has been discharged by a female. These are very extreme cases. On account of the shortness of the urethra, it is very common for females to pass calculi, by an effort of nature; and it does not appear that females are, by any means, so subject to the complaint as males.

When the suffering has been very great, and an operation has at last been performed, it is generally found that the calculus is, externally, of a phosphatic kind; but an entire phosphatic calculus is rarely seen. In this state of things (when the phosphatic diathesis exists) the kidney is at first affected only functionally. From irritation of the urinary organs, it secretes morbid urine; urine which has an excess of urea, together with a tendency to a phosphatic deposition; but, at last, actual structural disease of the kidney takes place. If the kidney could be preserved in a state of functional health,—if it could be made to secrete proper urine, it is probable

that, although a stone exists in the bladder, it would not increase, even around an accidental nucleus. But the accidental nucleus produces irritation; that irritation is communicated to the kidney; the kidney secretes morbid urine; from this morbid urine deposition takes place; and so the calculus increases. The moment the urine becomes unhealthy, then a deposit takes place; and the mischief goes on increasing. Frequently, at its origin, the disease does not depend upon any external circumstance; but there is a real disposition to these morbid deposits; which disposition gives rise to them, and they go on increasing, till a calculus is formed. But if, by chance, any thing gets into the bladder,—a piece of bougie or a drop of blood,—so as to form a nucleus,—this, by inducing irritation, will cause calculus to form round it. If, by art, we could keep the urine healthy, it is supposed that a calculus would not be formed;—that the nucleus would not serve for any thing to collect around.

It does not appear that a calculus goes on increasing regularly. The urine is not always equally morbid; the irritation is not always equally felt; and external circumstances are not always equally unfavourable. The patient neglects himself, from time to time; or some unfortunate occurrence takes place. In short, the urine is not always in the same morbid condition; and therefore the calculus does not go on regularly increasing at the same rate. Sometimes a calculus has been known to increase very much, and the state of the urine to become more and more morbid; and then, again, the process has been exceedingly slow. There is another reason to make us suppose, that the deposition is not constant. Many calculi have a laminated structure; and between the laminæ they appear to have suffered some diminution. There is a space there; and they frequently look as if they were worn by water moving around them. The occurrence of separate laminæ, indeed, is considered to prove their irregular deposition.

It is not only where there is great suffering, or where the urine has become phosphatic, that an operation is proper, provided the case is not too far gone; but if the patient be below puberty,—even although the sediment is not phosphatic; but is red, and consists of lithic-acid and lithate of ammonia,—then it is considered that the calculus should be removed. If the individual be below puberty, there are five thousand chances to one of the calculus increasing, and giving further trouble; and though the patient may not be suffering much, it is generally best to extract it. Lithotomy is considered to be less dangerous in children, than in adults. It was found at Norwich to be four times less so. Generally speaking, the ratio of mortality, from lithotomy, is about one in seven and three-quarters; but in Norwich it is said to be less than any where else; so that, for forty years, Dr. Marcet found that the average of mortality there was but one in eleven and three-eighths;—before puberty one in eighteen; and after that period one in four and three-quarters. Nearly one-half of the cases of stone in the bladder are found to occur before puberty; and then there is an increased number again after forty; and but one

female was affected with stone in the bladder, for twenty-three males. Some ascribe this to the quiet habits of females,—to the circumstance of their not being subject to laborious exercise; and others ascribe it to the shortness of the urethra. The latter circumstance must have great influence; but, in all probability, there is less disposition in them to the disease.

These are the only considerations for the *medical* practitioner. With regard to the performance of the operation, of course I have nothing to do with it. All that we have to give an opinion on, is the condition of the urine;—taking into consideration, when contemplating an operation, the suffering and the age of the patient.

CYSTITIS.

The urinary bladder is, of course, subject to inflammation; and this disease is called *cystitis*;—"cystis,"—*the bladder* (from κυστις, *a bag*), and "itis,"—*inflammation*. The symptoms are a burning and throbbing pain in the hypogastrium; tenderness on pressure; a very frequent desire to make water; and a most horrid pain at the neck of the bladder, while the urine is passing;—so that the patient, perhaps, can only void it on his knees. The urine is made in a very small quantity, perhaps every ten minutes; and it is often high coloured,—perhaps bloody. There is also tenesmus. This affection is induced by turpentine, cantharides, and other things which peculiarly irritate the urinary organs; but more particularly by gonorrhœa. The inflammation of the urethra spreads inwards; and then you have inflammation of the bladder. The treatment is simple enough; but it requires to be put into practice vigorously.

CYSTORRHŒA.

The bladder, however, is subject to *chronic* inflammation; and it is still more subject to an affection of the mucous surface; in which affection there is a great discharge of ropy mucus,—such as occurs when a calculus exists in this part,—and causes great suffering. There is not only this quantity of ropy mucus secreted; but the mucous membrane itself becomes hypertrophied. As much as several pints of this ropy mucus have been known to be discharged in a day; but it is very common indeed for a pint to be discharged. It subsides to the bottom of the vessel, and is quite white. It sometimes blocks up the urethra; so that a little difficulty is experienced, from time to time, in making water; and at last it is really purulent. This affection is called *cystorrhœa* (from κυστις, *the bladder*, and ρεω, *to flow*). After death, if the disease prove fatal, there is frequently a thickening of the mucous membrane to a great amount. The muscular fibres are seen distinctly; and, in some parts of the bladder, are very much developed. It would seem, indeed, that those muscular fibres described by Sir Charles Bell, and which run from the extremities of the ureters, become hypertrophied;—so that, at the orifice of the bladder, you see a triangle; the sides of which run from the mouth of one ureter, to that of the other, and from both to

the mouth of the other. You sometimes pass your finger down half an inch;—so great is the development.

The treatment of a case of this kind must be antiphlogistic;—so far as the patient's strength will allow of it. The frequent application of leeches is proper; and if there be no excessive irritation, but more discharge than any thing else, turpentine in small quantities has been occasionally used with advantage; and so has uva ursi. You may put an ounce of the latter to a pint and a half of water, and boil it down to a pint. Cubebs, likewise, have been occasionally serviceable. These cases, however, taken altogether, are very bad; and, in a large number of instances, a stone exists in the bladder; or there is a stricture, which gives rise to this irritation; as well as to hypertrophy, or disease of the prostate. If the urine be alkalescent (deficient of acidity), it may be well to give acids and narcotics, in order to lessen the irritation; and, for this purpose, you may give conium, opium, and hyoscyamus. But when the mucous membrane becomes hypertrophied, and there is secretion to such an amount as this, you can do little more than afford temporary relief.

HYPERTROPHY OF THE BLADDER.

So great is the disposition to hypertrophy of the muscles of the bladder, that it is said that no other muscles of the body are so increased by exercise, as the muscular portion of the bladder;—that is to say, if any difficulty exist in the passage of the urine, or there be any irritation about this part, so as to make the bladder contract frequently, no other muscles grow to the same amount. Indeed, in some cases, the inner part of the bladder looks like the inner part of the heart. The muscular fibres and the mucous membrane are so developed, that, at first sight, you would think it was the right ventricle of the heart. The mucous membrane is often softened, both when it is hypertrophied, and when it is not. Sometimes the villi and the follicles are so apparent, that you perceive them instantly; though naturally they are so minute, that you cannot see them. The cellular membrane is frequently hypertrophied, so that the bladder will become hard; and if a sound be passed into it, the hardness is discovered. The mucous membrane is sometimes enlarged;—so that you have the appearance of a polypus. Sometimes fungous excrescences, of a cancerous or encephaloid nature, take place. I formerly mentioned a case of this kind, where encephaloid deposit gave rise to hæmorrhage, which destroyed the patient. Scirrhous tumours are found in the bladder. They are sometimes original; and sometimes connected with disease of other parts;—with a diseased rectum, or a diseased uterus. A cyst has sometimes been found in the organ. It is almost always connected with its internal surface; and, in that case, is most probably a mere sacculus (the dimunitive of "saccus,"—*a bag*). A sacculus, however, may be formed originally; and it may be come so very large, as to be the same size as the bladder itself. The bladder has sometimes been divided into two chambers by adhesions across.

PARALYSIS OF THE BLADDER.

The bladder is frequently the subject of palsy. When a person labours under paraplegia (a loss of power of the lower extremities), he is generally unable to retain his urine. At first he is unable to make water; so that it continually requires to be drawn off. This you see in paraplegia from accident. After a time, however, the detrusor urinæ muscle loses its power, and then the sphincter also loses its power; so that the patient cannot *retain* his urine. These parts are much disposed to become diseased in old men;—just as the uterus and the ovaria are disposed to fall into disease in old women. When the prostate and the parts of generation have done their duty, they fall into a diseased condition;—just as similar parts do in women. The bladder suffers with the rest; so that old men are frequently unable to sit like young ones, and will be obliged from time to time, to go out of the room. Sometimes this will occur from accidental circumstances. I have known paralysis of the bladder occur from an opiate injection. This is worth knowing. From having a suppository, or an injection of opium, the bladder has become paralyzed; so that it has been necessary to draw the water off; and this has occasioned much alarm. On a repetition of the injection, the bladder has become so torpid, that actually retention of urine has occurred. Sometimes it is produced by a torpid state of the system,—where the head is oppressed. It is a thing which frequently occurs in fever; and sometimes, without any obvious reason, the bladder loses its power; just as any other part of the body may do.

If there be no disease of the spine, and no organic disease of the bladder, no inflammation,—nothing more than the simple paralysis, without your being able to trace it to any thing more than torpidity, then cantharides is one of the best remedies. So, perhaps, is electricity; and any thing else that is stimulating.

You are aware, from surgical lectures, that the bladder may be in this state while the urine is dripping away; for when the organ is distended to a certain amount, the urine will pass (*guttatim*) involuntarily. This is called *stillicidium urinæ* ("stillicidium" being derived from "stilla,"—*a drop*; and "cado,"—*to fall*). The patient will tell you that he cannot hold his water; while, in fact, the bladder is full, and can hold no more. It is therefore necessary, in these cases, to ascertain the condition of the bladder. Very frequently it happens that this form of paralysis takes place temporarily. If a person do not make water in proper time, he loses the power of voiding his urine, and distention is no longer felt. The muscles have no longer power to empty the bladder, and it remains greatly distended, although the urine is constantly coming away. When you are told, therefore, that a person cannot hold his water, you have to ascertain whether he is not holding too much, and cannot hold any more.

DISEASE OF THE PROSTATE.

With regard to disease of the prostate itself, you will continually be consulted upon it; as it occurs so frequently in old men. From the pressure, there is frequently a great difficulty in making water; and sometimes it acquires so very large a size, that there is difficulty even in going to stool. There is pain there; and the abdomen, at last, falls into a state of disease; and death is frequently the consequence. After death, you will find the prostate full of large cells. It is very much hardened; and perhaps it has acquired an immense size. This may be ascertained during life, by the introduction of the finger into the rectum. Calculi frequently come from the prostate; and they are sometimes found, in very large quantity, in the cells of that gland. Occasionally they will grate against a sound, when it is passed on towards the bladder. They are generally small,—sometimes exceedingly so; and are always, I believe, found to consist of phosphate of lime.

With regard to the *treatment* of disease of the prostate, you have chiefly to resort to surgery;—drawing the water off regularly. On account of the great pain, however, it is sometimes necessary to employ narcotics; and I think it would be worth while, in such cases, to give iodine a fair trial;—to rub in iodine and hydriodate of potassa externally, and to give it internally. I have not had many opportunities of treating such cases, because they generally fall to the surgeon; but I have treated them occasionally; and temporary benefit has ensued. I have had two or three patients, in whom there appeared to be a temporary alleviation of the complaint; and if any thing would afford temporary relief, it would be iodine. I do not know whether it would *cure* a case of this description; but I should expect to do more good by it than by any other remedy.

GOUT.

I have now finished the consideration of diseases of the urinary organs;—so far as it is incumbent on me to treat of them. I will now speak of an affection, which is very much connected with disease of the urine; although it is another complaint. I refer to *gout*. When persons have the gout, I am never surprised if they have stone;—gout and stone so frequently go together; though gout is a disease which, in the first instance, affects the joints. It is called the "gout" from the Latin word "*gutta*," or the French word "*goutte*,"—which, in its turn, comes from the Latin word "*gutta*,"—*a drop*. It is so called because it was supposed to arise from a deposition of *drops* from some morbid fluid in the joints. In Latin it is now generally called *arthritis*,—"inflammation of the joints," (from αρθρον, *a joint*; and "itis," *inflammation*). In the classics, it is spoken of under the head of *podagra*, when it affects the feet (from πους, *the foot*; and αγρα, *a seizure*); *chiragra* when it affects the hands; (from χειρ, *the hand*; and αγρα, *a seizure*); and *gonagra*, when it affects the knees (from γονυ, *the knee*; and αγρα, *a seizure*); but all

these "*agra*" are comprehended in the term *arthritis*. Although this term means "inflammation of a joint" from *any* cause, yet it is now appropriated solely to *gout*.

When this affection makes its first attack, it generally begins at two or three o'clock in the morning;—just at the time that a fit of asthma commences; as, indeed, do some other diseases. Usually it first attacks the ball of the great toe. The patient wakes in the most excruciating pain. He then becomes feverish; and continues in this state till the next midnight; when the pain remits. The following morning, he finds his toe swollen and reddish; and he has exacerbations of the pain for several days and nights. The disease then frequently declines; the patient perspires freely; and the part itself loses its cuticle. The cuticle desquamates; there is violent itching for some days; and then there is an end of the business.

After a time, sooner or later, the same thing occurs again. Perhaps the disease attacks the balls of *both* great toes; perhaps it flies from one to the other; and affects the hands, the knees, or the wrists. So also it will shift its place, during the same attack;—running from one knee to the other, from one wrist to the other, from one ankle to the other, from the hand to the feet, and *vice versâ*. The more frequently it comes, the less probability is there of its being confined to the fingers or toes; and the more likely is it to spread to the ankle, to the wrist, or even to the elbow and other joints; perhaps the shoulder becomes affected. But it begins at first in the smaller joints, and affects them to the last;—going to the others only occasionally. Generally the intervals between the attacks grow shorter;—the patient has fits more and more frequently; and they often last longer. The joints, at last, may become stiff; and deposits will take place under the skin; so that the joints of the fingers and toes become enlarged, swollen, and harder than is natural. Occasionally a solid deposition of a white substance takes place, and sometimes it is fluid;—so that if you prick the part which is soft with a needle, you squeeze out a quantity of matter, like soft mortar. Not unfrequently there is a nephritic attack,—an attack of inflammation of the kidneys; with a deposition of lithic acid, or some compound of it. Occasionally these things take place with the gout; occasionally they take place only during the intervals; but a deposition in the urine, and a fit of the gout,—where there is a deposition in the joints,—are frequently very closely connected.

After the attack, people are generally better than they were before. They find it does them good; and therefore they are not at all sorry that they have had the disease. Many persons long for a fit of the gout, when they have not had it before. They say that gout is in the family; and that if they had an attack, they should do well. These who *have* had it, if any thing be the matter with them, are satisfied that they should be a great deal better, if they had another attack; and many people try to bring it on. Before the attack, there is frequently indisposition of some sort;—the symptoms that I mentioned under the head of "disorder of the digestive organs."

There may be langour, or lowness of spirits, or pain of the head, or wandering pains (*gouty* pains) coming and going in the larger or smaller joints. Sometimes there are palpitation and giddiness;—functional diseases, in short, in almost every part of the body.

If these symptoms exist for some time,—so that the patient really feels himself diseased, the disease is called "*atonic* gout,"—gout without strength (from *a privative*; and τονος, *strength*),—gout where there is not sufficient strength to bring it out. A gouty disposition exists; but there is not activity enough in the system to bring it forward. Sometimes, when the gout has come on in a very satisfactory manner, it will suddenly cease. It will not retire to another joint, but will suddenly cease altogether; and the patient will have some internal affection;—perhaps apoplexy, perhaps violent vomiting, perhaps gastrodynia, or perhaps violent colic. It will be some severe internal disorder; and it is then called "*retrocedent* gout (from "retrocedo,"—*to go back*). Sometimes the affection within is of an inflamatory nature; and then it is called "*misplaced* gout;" but it is no matter whether we call it "retrocedent" or "misplaced;" for inflammation is very often ascribed, by old authors, to some nervous affection, or to something else. You have only to consider that, if the gout does not come out satisfactorily, it is "*atonic* gout;" whereas, if it suddenly cease, an internal part is affected in a violent degree, it is "*retrocedent* gout" or "*misplaced* gout," according to the affection that is going on.

Some persons have had very extraordinary symptoms relieved by gout. I knew a gentleman who had had pain of the stomach (gastrodynia) for many years. I know not *how* many years it was; for he did not attend to it much; but at last a fit of the gout came on; and he has never experienced the pain since. Palpitation, which has existed for a long time, has frequently ceased upon the occurrence of a fit of the gout. Strangury, cystorrhœa, piles, and almost every disease you can mention, has ceased on the appearance of gout. Sometimes they alternate with gout; and if such affections be very violent indeed, then they may be called "misplaced gout;" for they have come on when gout should have appeared.

The disease, at first, most frequently commences about the end of January, or the beginning of February. There is no universal rule; but it occurs more frequently then, than at any other time. It occurs in males, much more frequently than in females;—just as is the case with regard to "stone." It is also said to occur in *robust* males, far more frequently than in *weak* ones. It never has been known in eunuchs;—at least, so it is said. If such be the case, gouty old gentlemen have an easy remedy. It is also a disease that is very hereditary. This is one of the great hereditary affections. If it occur in females, it is generally in *masculine* females;—those who have a little touch of the male in them;—robust, hearty-looking women. I do not say this is the case *universally*; because I have seen the reverse myself. It occurs particularly in men who have circular chests, short necks, and broad heads;—such as are called

thick heads;—not in those who have large foreheads; but in those who have bulky heads altogether, and who are of full habit. It occurs chiefly in those who eat a great quantity of flesh-meat, and drink a good quantity of wine. Among those who are predisposed to it, it seldom occurs till after thirty-five years of age. I have seen it in persons below puberty; and it is said to have occurred in infants; but, more frequently than not, it takes place in those who are above thirty-five; who indulge at the table; and who are of a plethoric habit. Such are the predisposing causes.

The pain, in gout, is not only very severe, but is also of a very peculiar kind. Sydenham, in writing of his own sufferings, compares them to the gnawing of a dog; and patients who have suffered from it extremely, say they can distinguish between the pain of gout, and that of rheumatism.

In speaking of the predisposing causes of the disease, I mentioned that, for the most part, males suffer from it more than females; and that where it does occur in the latter, they are very robust. The males who experience it are chiefly those who are thick, stout, and of a sanguineous temperament; but occasionally you will see it in persons who are extremely thin, spare, and emaciated. Although the disease, in a great number of cases, is connected with a certain development or form of body, yet, in many instances, it certainly does arise independently of any external appearances whatever. Sometimes very delicate women are subject to it;—persons whom you would imagine the least likely to suffer from it. In those cases in which the external appearances are not such as would lead you to suppose that the patient would have it, there is usually a strong hereditary predisposition; and where this predisposition exists, you will have the disease,—whether it is hereditary or not. You not only will meet with cases where the external appearances are such as would lead you to suppose that the person would suffer from the disease; but it will occur in the most temperate individuals;—in persons whose habits are such, and *have been* such, as to make it very unlikely that they should have an attack of gout. The disposition to the disease may be exceedingly strong; and persons may become the victims of it, independently of the external appearance of the body, and independently of any of those excesses which so frequently produce it.

I stated, with regard to the progress of the disease, that it generally begins in one great toe; that, on the second attack, it perhaps occurs in both; and that so it spreads to the other joints; till, at last, after several paroxysms, many joints will be affected. And not only does the disease become more extensive, but it also becomes more frequent; so that persons at first, perhaps, have a paroxysm every year or two; and then every year; then two or three paroxysms in a year; and at last they are scarcely ever without it;—they have it on the least exciting cause. I should have mentioned also, that some persons never have above two or three fits in the course of their life. I know an instance of an individual who, when

about thirty-five years of age, had an attack of regular gout; and, although he is now upwards of seventy, he has never had an attack since; though he has taken no particular care to avoid it. These are exceptions to general rules.

I mentioned that many symptoms will cease, when an attack of gout appears;—so that it is a very common thing for persons who have suffered in various ways, to suffer no longer after they have had a fit of the gout. This fact made so great an impression on the public, at one time, that gout was longed after as a great blessing; and people, with all sorts of complaints, would eat and drink, take a large quantity of wine, and do all they could to have a fit of the gout. As it is a disease which attacks the rich more than the poor, it was altogether a fashionable complaint. It was thought a creditable disease; and, at one time, every body longed for it, or declared that they had had it. You will find this whim strongly argued against in Dr. Heberden's "Commentaries;" which it will be worth your while to read;—not only on account of the elegant Latin, but for the excellent description which he gives of the disease; although, for the most part, he adopted poor and inert treatment.

The disease is particularly favoured by indulgence in wine. All fermented liquors do not appear to give the same tendency to it; and as to spirits, I am inclined to believe that, so far from disposing persons to the disease, they have a tendency to prevent it. At least, I hardly know an instance in which a person who has committed a great excess in spirits, labours under the disease; although wine-drinkers have it every day. It is a very rare complaint among the poor. Now and then, you will see it among them, because there is a peculiar predisposition to it in some persons; and sometimes it is hereditary, and will occur in spite of the absence of all the ordinary causes; but, for the most part, you will not meet with it in the lower walks of life. I have seen persons who, from their make of body, and from the occurrence of the disease in their progenitors,—many members of the family having had it,—were the most likely persons in the world to experience it; but who, from indulging in spirits to a disgraceful excess (and excess of that kind is *always* disgraceful) have not suffered from gout; although, beforehand, one would have said that they were most likely to have it by the time they were forty or fifty.

When a person is liable to gout, a paroxysm may be induced by the very slightest cause. If he indulge in eating and drinking too much, on any particular occasion, a fit of the gout is very likely to be the consequence. It will occasionally ensue from mental anxiety. Exposure to cold,—which, in another individual, would induce an inflammatory complaint—will, in those predisposed to gout, produce a paroxysm. Even accidents,—such as a sprain of a joint,—will become local causes; and the patient will have an attack of gout, in that particular part. When persons have the disease for a length of time, it is very common for internal organs to become seriously diseased. It is very usual to see persons who have been the victims

of gout become asthmatic, or have disease of the kidneys, or have organic diseases of the stomach and intestines, or have chronic bronchitis. Very frequently, disease of the heart supervenes, and disease of the head occurs;—so that they die apoplectic. The gout, at last, is not confined to the extremities; nor are the internal symptoms merely functional; but the organs in the three great cavities of the body become diseased.

As to the *prognosis*, that must depend on the degree of the original disposition, on the part of the patient, to the disease; and also, in a great measure, upon the resolution which he has to follow up our advice. A great number of persons who have the gout, are very disobedient in this particular.

With respect to the *cure* of the gout, in general it is necessary that the patient should be very abstemious;—that he should live as low as he can to be in good health; and take as much exercise as he can bear;—only taking care that his health is not impaired by its violence. It is impossible to lay down any specific rule; and to say that a man, disposed to gout, should not drink wine,—should not drink beer,—should not eat meat, would be wrong. There are some gouty patients who would be better, if they left off fermented liquors; others would be better if they went farther, and ate no meat, but confined themselves to vegetable diet and milk. There are other cases, again, where this would be absurd;—the patient could not live without meat; and there are other cases where it is necessary to allow a certain quantity of wine. The rule should be, to let patients live as low as they can to be in good health; and that point must vary in different individuals. The stomach of many persons labouring under gout is so weak, that they cannot digest their food without a certain allowance of wine; but, generally speaking, the diet I have recommended, and as much pleasant exercise as possible without weakening the patient, is advisable. No doubt, however, there should be extreme temperance. The patient should not take more wine, or eat more meat, than is necessary. No doubt many persons will thus get rid of the gout altogether, with the most perfect ease; and no doubt others, who will not get rid of it,—(and these may be by far the larger number),—will have it very much mitigated. It is necessary that they should be particular in their food;—that if they eat any food, they should take that which is the most digestible; such as fresh mutton, or fresh beef; without any sauce, or elaborate preparation on the part of the cook. They should take simple Sherry or Madeira, and not mixed wines. Above all, they should not take acescent wines, such as Champagne; and perhaps they had better take brandy-and-water. Many persons, from taking Rhenish wines, or Claret, or Champagne, have a fit of the gout directly. In general, Sherry agrees best; and therefore you should recommend it;—unless the person knows, from his own experience, that some other wine, or a small quantity of brandy mixed with water, is better for his constitution. I am supposing that the stomach of the patient requires such a plan to be adopted.

Friction is exceedingly useful, where exercise cannot be adopted. It would be well for many persons who are lame in the feet, to be rubbed down, once or twice a day, like a horse. It would be very beneficial, in a great number of cases; and they would find it to be a very great luxury.

In a regular fit of the gout, the best medicine that can be given, is colchicum. You should exhibit the wine, in half-drachm doses, every six hours; and it should be mixed with some other purgative; because you want its action to be speedy. The sulphate of magnesia makes a good combination with it. You may produce purging in twenty-four hours, or sooner; and when that takes place, the patient is generally relieved at once. Any good, active purgative will have a beneficial effect; but colchicum appears to be more efficacious than any other. Unless it purges, however, it will seldom have any influence. Now and then, the symptoms will all cease after two or three doses; but, in the greater number of instances, so desirable a result does not occur till purging takes place. It is better to quicken the purgative effect, in order to prevent it from griping; and the sulphate of magnesia will excite its action so much the sooner. Venesection may be advisable in young persons; but, in general, it is out of the question. Leaches applied to the part, are frequently productive of very great alleviation; and it is a great comfort, in general, to apply an evaporating lotion;—not cold, but tepid. A spirituous lotion applied tepid, so as not to produce a chilly effect, is generally serviceable. There can be no doubt, frequently, of the great use of colchicum, and of evaporating lotions; and when they are being employed, the diet should be scanty.

When the paroxyism is over, (and it need never last long if you treat it in this way), friction of the parts is always found useful;—rubbing them with a flesh-brush, or the hand, and some salt-and-water, or similar stimulants. Sometimes it is necessary to give wine, or mild tonics, to relieve the langour that is left; but it is by no means *always* necessary. Occasionally, from the great severity of the pain, opiates may be required; but it is necessary to use the antiphlogistic measures that I mentioned. If all this be done, and the patient's life is continued, the disease becomes comparatively trifling. I say "comparatively"; because it is always painful; and therefore there is more or less suffering. But it is not nearly so painful as it would be, if patients wrapped up their limbs in flannel; took no colchicum; and, in the intervals of the disease, indulged in every absurd way they could. It is dangerous to apply cold to the parts during an attack of gout. Some have done it; and Harvey, who discovered the circulation of the blood, was accustomed (when an attack came on) to plunge his feet in a pail of cold water. I know persons that do this; but no medical man is justified in recommending it; for it has frequently happened that some disease has suddenly begun within. There has been apoplexy induced; or violent gastrodynia; or an affection of the heart; and the patient has died very shortly. If the patient chooses to do it on his own

risk, he may; but he ought to be warned of the consequences by his medical friend.

Gout is a disease which it is not easy to eradicate; but, by the employment of colchicum, the disease is rendered much less violent than it was a few years ago. Formerly colchicum was employed with great success; and then it was forgotten entirely, till within a very few years ago. When I was a student, no one thought of exhibiting colchicum, in any form. It was only spoken of as a thing once used;—as an uncertain diuretic, and a violent purgative; and it was thought that it would be better, if it were expunged from the Materia Medica. I spoke of the *wine* of colchicum; but the powder and other preparations are very good. I have been in the habit of using the wine; and it has answered very well. Some give the powder, in doses of five grains, every four or six hours; and some give the Acetum Colchici. In general, it certainly does no good till it purges; though sometimes the opposite is the case.

RHEUMATISM.

The next disease of which I will speak, is nearly allied, in many particulars, to gout; and is called *rheumatism.* As "gout" is named from the idea of the dropping of morbid fluid, so "rheumatism" is named from a similar idea;—the term being derived from the Greek word ρευματιζω (from ρεω, *to flow*). It is said that gout and rheumatism were not accurately distinguished from each other, till the year 1642;—both of them passing under the name of *arthritis.* Bellonius, who was a physician that suffered much from rheumatism, is said to have been the first that made an accurate distinction.

Rheumatism may occur in an *active*, or in a dull *passive* form; and the two varieties require very opposite treatment. In the *active* form of rheumatism,—that which is commonly called "*acute* rheumatism,"—there is heat, pain, and (in most instances) a swelling of the joints. These are not the *smaller* joints, as is the case in gout; but the *large* ones; in general the wrists, the ankles, the elbows, the knees, the shoulders, and the hips. When these parts are affected with it, there is pain; but nothing of that violent kind which occurs in gout;—as if a dog were gnawing the joint. It is as violent as a patient could wish it to be; but by no means so horrid as gout. The parts are generally hot and red; and frequently, from the pain being situated in the theca of the tendons, I have seen red streaks running in the situation of the tendons. There is generally swelling and puffiness in some part. Usually, there is feverishness, pyrexia, and a quick pulse. The pulse is not hard; but, in general, full and soft. The tongue is not foul and dry; but, in general, very white; and the urine is high-coloured, and deposits a lateritious sediment.

This disease does not, like gout, begin particularly in the night; but invades at any time; and it does not come on at any particular season of the year. It arises from an evident exciting cause; and therefore it may come on at any time. It does not confine itself to

one joint particularly; but leaves one and goes to another; and it will attack two or three at the same time. There is a shifting about; —it migrates in the most singular manner. Not only is there heat and an increased temperature, but heat generally makes the patient worse. Usually, too, there is profuse sweating: and the perspired fluid is often exceedingly sour to the smell. When the disease goes off, the parts do not desquamate and itch,—as they do after gout; but they merely cease to be hot, cease to swell, and cease to be inflamed. This is the usual state of things when the disease begins suddenly as an *acute* disease; but you will find a similar state of things in the *chronic* form. When the disease has lasted a twelvemonth, you will find the parts still hot, still swollen, and still painful; and the pain is increased if heat be applied. You will find the same symptoms as in the acute affection; only they are less violent. In general, however, the sweating does not continue; for after the disease has lasted a few weeks, this symptom ceases; and the patient, perhaps, forgets it. It is sometimes a little difficult to make an accurate diagnosis;—at least it requires a little trouble; and it is well to ask about the sweating. If the disease have been acute rheumatism at first, you will find there has been sweating; at least, it is unusual for a person not to sweat at the beginning of the disease.

Although the joints are the parts particularly affected, yet persons frequently have the disease in the back; and then it is called *lumbago*, (from "lumbus," *the loin*). Frequently it occurs in the back of the neck; and then the patient is said to have "a crick in the neck." It may affect the face; and, indeed, it may affect almost any part of the body, where there are fibrous membranes, aponeuroses, ligaments, tendons, or (perhaps) muscles. There is no danger whatever from this disease, except from one circumstance;—which is, that the membranes within the chest (the pericardium and the pleura), are liable to be affected. They are sometimes attacked during the disease; but when the disease has suddenly ceased, or has gone off gradually, inflammation within sometimes takes place. This internal inflammation will occur at all periods, and in all possible circumstances; but it most frequently takes place about the time of puberty, and in young adults; so that, in acute rheumatism, you should never omit observing the state of the chest;—just as, in the case of an obstruction of the bowels, it is right to ascertain whether there is a hernia or not. Now and then, inflammation occurs within the head, and phrenitis is set up; but that is rare; whereas inflammation of the pleura and pericardium, particularly the latter, are very common.

The *active* form of the disease, I mentioned, may be either acute or chronic. The chronic form *may* have active symptoms; but very frequently it has not;—the parts are not hotter than they ought to be; but, on the contrary, are relieved by heat. This is sometimes the case in the *acute* form of the disease;—that is to say, it occasionally happens that persons, when they are first attacked with

rheumatism, have no heat;—the pain is not aggravated by heat; but the parts are cold, and are the better for the application of heat. It is generally, however, in the *chronic* form of the disease, that the parts fall into this state of atony. The disease sometimes appears to consist of little more than violent pain. You will sometimes hear people complain of pain apparently in the muscles; but it may be situated in the aponeuroses over the muscles. There is simply pain on motion; a pain not at all increased on pressure; and there is no swelling. This form of the disease has been called *rheumatalgia.* I do not know the necessity for giving it this name. Although rheumatism generally affects the fibrous membranes, yet sometimes it apparently affects the muscular fibres; and sometimes it appears to affect the nerves, or their covering; so that it will distinctly run down the sciatic nerve; though it is most frequently seen in the nerves of the face. I mentioned, when speaking of "tic douleureux," that sometimes, besides the genuine form of that disease, you have another affection, called *neuralgia* (from *νευρον, a nerve;* and *αλγος, pain*), which is easily cured. When rheumatism affects the nerves, it clearly exists in their course, and then it frequently assumes an intermittent form. This is particularly the case in the head.

Rheumatism is sometimes intermittent, when it does not affect the nerves particularly; but when it affects aponeuroses; and this form of the disease most frequently attacks the head. In this case, it usually affects one half of the organ; and the pain generally comes on in the evening, about six o'clock; and continues, very violently, for a few hours. Occasionally, when it is intermittent in this way, the parts are hot, swollen, and throb; and the eyes water. But, in other cases, this is not felt; and the patient is all the better for wrapping up his head in his wife's flannel petticoat; or, if the patient be a female, she wraps it up in her own. This is done among the lower orders; and with very good effect.

Occasionally the parts, when long affected with the disease, become thickened. You will have considerable thickening of the joints. The small joints of the fingers will throb, from time to time; and the patient will become a cripple, in consequence of the joints being inflexible;—just as in the case of gout. When rheumatism affects the smaller joints, in the same way as gout, it is called by the common people *rheumatic gout.* Not that it is a combination of the two; though it sometimes may be. But as *gout* affects the *small*, and *rheumatism* the *large* joints, if rheumatism should affect the *small* joints, then it is usually termed "rheumatic gout." You may have the same appearances both from gout and from rheumatism.

There is, I believe, but one exciting cause of the disease; and that is the application of cold, or cold and wet; more especially if the patient be fatigued. I do not know that I ever saw a case, in the whole course of my life, that arose from any other circumstance. I mentioned before,—when speaking of inflammation generally,—that rheumatism does not terminate in suppuration. If suppuration occur, it must arise from another inflammation being accidently present, or being

excited by it. Neither does it terminate in mortification. There is sometimes effusion into the joints;—a considerable secretion of synovia or of fluid in the bursæ: and sometimes in the tendons. The parts may become rigid; and then, sometimes, mortification has been the consequence.

Rheumatism will occur in infants, as well as in old people; and this is worth knowing. I have seen many cases of the disease in very young children;—a circumstance very likely to be passed over; and I have also seen disease of the heart in very young children; as a consequence of pericarditis excited by this disease.

As to the *treatment* of the affection, whether it is acute or chronic, it should be exactly the same. You have only to make two distinctions;—to ascertain whether it is the inflammatory form of the disease;—whether the parts are hotter than they should be, and heat does *harm*; or whether the parts are *cooler* than they should be, and heat does *good*. In the one case, antiphlogistic measures will be required; and in the other stimulants. Sometimes, where the patient is plethoric, it is advisable to take away blood from the arm; and you will find it buffed and cupped, but there is no danger whatever from that circumstance; for if you go on bleeding, you may find the blood buffed and cupped, till you have got nearly all the blood out of the body. But venesection is not always required. Free *local* bleeding generally answers better; but there is no objection to *general* bleeding, if the strength will allow it; and if several large joints be affected, it will then be *better* than local bleeding. With respect to the parts themselves, whether you apply leeches, or cupping, or not,—you will find it of great use to apply cold water or cold lotions, as long as the temperature is higher than it ought to be, and they feel comfortable to the patient. There is no danger in applying cold, with these limitations. If the patient should be timid, and yet long for cold evaporating lotions, they may be applied tepid, as in the case of gout; but I never saw injury arise from applying cold in rheumatism, where the parts were hotter than they should be, and the patient felt hot.

The two best internal medicines are, without doubt, colchicum and mercury. Colchicum here, as in the case of gout, generally does no good till it purges; and when once it purges the patient thoroughly, the disease usually gives way. It should be given in the same way as in gout;—that is to say, with magnesia; that it may produce its effect as speedily as possible. As soon as it purges, it is right to desist; and also as soon as its effect ceases. If you give a dose of hydrocyanic acid with the colchicum, it sits better on the stomach. You may exhibit one, two, or three minims of the acid. But, every now and then you will find obstinate cases; which will not easily give way; although the greater part of them do; and then it is a pity to go on with the colchicum. You had better exhibit mercury, and get the mouth tender. If you do this, in the first instance, instead of giving colchicum, the success is about the same. Colchicum may gripe, and mercury may make the mouth sore;—so that

you may not be able to continue them. You may then leave off the one (whichever it may be) and exhibit the other; or if you begin with one of them first, and find it does no good, then you may exhibit the other.

As soon as the inflammatory symptoms have gone down, and the patient has been properly evacuated, many give bark and quinine. It has been said that bark is a safe and good remedy even in active inflammatory rheumatism; but you will not find, in Haygarth's work, any authority for such practice. You will find, in his book, accounts of the successful treatment of rheumatism by bark; but then it was not till he had evacuated the patient upwards and downwards, and employed the antiphlogistic plan. After that, it is said that bark prevented the disease from recurring. I have not had occasion to use that medicine; for I have found the disease give way under the treatment I have mentioned. It may be right to give narcotics, in order to produce ease; and a full dose of opium may be proper at night. There is no harm in it, provided you adopt antiphlogistic measures;—provided you bleed as far as bleeding is indicated, purge the patient well and apply cold.

Exactly the same treatment is proper in the *chronic* form of the disease, if there are inflammatory symptoms; but whether the disease be recent or chronic, if the parts are not in this condition, an opposite plan should be adopted; and it is right to stimulate the parts. In this case, you will find friction an excellent remedy; and you will find the hot bath (particularly the vapour bath) very useful. If the patient find alleviation from warmth and stimulants of all kinds, or the parts are colder than they should be, then this plan should be put in practice. The hot bath should be employed, not every other day, but every day; and sometimes it should be used, in cases of extreme coldness and extreme pain, twice a day. It is here that electricity is of use; as well as friction; together with stimulating washes, stimulating liniments, and croton oil;—which is a good stimulant when applied externally, and does not purge when it is so employed. Tartar emetic and sometimes moxa have been employed; but only, of course, in very severe cases.

It is in this description of the complaint, that you find acupuncture of great use.* It is only in the fleshy parts that you can intro-

* Much information on this subject will be learned from Dr. Elliotson's paper on Acupuncture; in the "Cyclopædia of Practical Medicine." We subjoin his observations on the term itself. "The passing of a needle into the body, is termed *acupuncture* (from 'acus,'—*a needle*; and 'pungo,'—*to prick*). From forgetting that the word '*puncture*' has two significations,—that it is used to express both the wound and the act of making it,—some have termed the operation '*acupuncturation.*' But to subjoin the syllables '*ation*' to the word '*puncture*' or '*acupuncture,*' is as improper as to subjoin them to the words '*preparation*' and '*fabrication;*' each of which already ends in '*ation,*' and has a similar two-fold meaning. An exactly parallel error would be to say '*manufacturation.*'" Dr. Elliotson gave the plan an extensive trial in St. Thomas's Hospital; and has published the result of that trial, in the fourteenth volume of the "Medico-Chirurgical Transactions." Out of forty-two cases, thirty were cured.

duce the needle.* I should never advise it to be put into tendons and joints; though I have seen such things done. In general, it is only in the fleshy parts,—such as the deltoid, the biceps, the gastrocnemius, the rectus, or the gluteus muscles,—that it is right to put them. The best mode is to roll them by pressing them between your fingers; and they will soon pass to the desired length. You may insert them an inch and a half in depth; and if the bone is in the way, as in the case of the os femoris, there is no harm in the needles coming upon it; though there is no use in it; but they may go as far. The success of the operation does not depend on the number of needles; but on the time they remain in. If it be comfortable to the patient, you may let them remain in a couple of hours; that is, as long as a patient can bear to be kept still. There is no pain worth notice when they are introduced; and when they are in, there is no pain at all. It should be done every day; and occasionally you will find relief as soon as they are taken out the first time; but, in other instances, not till they have been employed two or three times; or perhaps oftener than that. It is only where the parts are not hotter than they should be, that acupuncture is of any use. I never saw it do good when heat increased the pain. Acupuncture is not an absurd remedy. It is a *strong* one; but I am quite satisfied it is a real remedy, if it be properly applied.

In the *chronic* form of rheumatism, you will find mercury of the same use as in an *acute* attack. Whether the parts are hotter than they should be, or not, you will find obstinate cases give way to mercury, when they will not yield to any other medicine. Nothing is more common than for persons who are the victims of chronic rheumatism (whether it be inflammatory or not), but who are suffer-

* M. Brettonneau says, that he has passed needles into the cerebrum, cerebellum, heart, lungs, and stomach, of sucking puppies,—through and through, in all directions,—with no sign of pain, nor with any particular ill effect; unless when too large a needle was thrust into the heart; and, in one instance of this, a little extravasation took place into the pericardium. So far from fearing to acupuncture the heart, Dr. Carraco would have us do so in the worst cases of asphyxia. He declares that, in the presence of several persons, he kept several kittens under cold water, till they were apparently dead,—stiff, motionless, frothing at the mouth, without pulsation of the heart, and regularly sinking to the bottom of the water, every time they were thrown in; that he passed a needle into the heart; that soon the needle began to be gently agitated, then rapidly so; and that one voluntary motion after another gradually took place, till life was fully re-established; and that the animals did as well afterwards, as if nothing had happened. Death, however, by acupuncture of the brain or spinal-marrow,—as a secret mode of infanticide,—is notorious in works on State-Medicine. "Guy Patin," says Foderé, "relates that a midwife was executed at Paris, for having murdered several infants at the moment the head presented at the os uteri, by passing a long and very fine needle into the brain, through the temples or the fontanelles; into the nape of the neck; or into the heart or its large vessels. Alberti and Brendel quote similar examples. In the "Causes Celebres" we read the horrible story of a woman who, towards the middle of the last century, made it her business to murder all the new-born infants that fell into her hands, by acupuncture,—practised at the top of the vertebral column, or in the brain;—with the sole intention, as she told the judges, of peopling heaven more and more."—*Elliotson on Acupuncture, in the Cyclopædia of Practical Medicine; Volume I; Page* 34.

ing great pain,—more especially if the pain be worse at night,—to receive no benefit whatever, till they have undergone a course of mercury; and as soon as the mouth is sore, they will lose all the pain. Mercury appears equally useful in both kinds of rheumatism. You will find that one of the best internal stimulants, in a case of this sort, is the ammoniated tincture of guaiacum. Guaiacum is a stimulating diaphoretic, and is very useful in this form of rheumatism; though it is of no service in the *active* form of the complaint. If you give the tincture made with aromatic spirit of ammonia,* you produce great warmth; and the patient remains warm for a longer or a shorter time. This is a medicine that may be given in various doses. Some persons are made hot with thirty drops; but others will take a drachm; and I have seen some who have taken six drachms, three or four times a day. There is no rule for it; but you shold begin with half a drachm; and, as long as the patient is not warmed by it, and does not find it irritate him, you may increase it. You will sometimes find the warmth last for one, two, or three hours, and from a proper course of it you will find great alleviation. Sometimes it purges; sometimes it irritates the skin, and produces the nettle-rash; but when internal stimulants are necessary in rheumatism, I think this is one of the best. In the chronic form of the complaint, it is often necessary to support the patient well;—to give him wine, and nourish him assiduously.

Arsenic has an excellent effect in this form of the disease, where the joints become cold. It frequently requires to be well persevered in; and (just like colchicum) you will find it borne by the stomach infinitely better, if you give prussic acid a little before it, or at the same time. Arsenic is a medicine which is much disposed to irritate the stomach and bowels, and to produce gastritis; and, short of that, it frequently produces nausea and vomiting; but that may generally be prevented by prussic acid. The moment you find heat in the stomach and bowels, and pain on pressure, it should be omitted. You should ascertain this point every day; and when it occurs, the medicine should not be resumed till these symptoms have gone off. Arsenic also produces soreness of the eyes, and redness of the throat; and when any of these symptoms arise, you must desist from exhibiting the medicine; and not resume it till they are gone off. As to the dose, there is no particular rule for it. It is best to begin with two or three minims; and as long as it is borne without doing the patient any harm, you may increase it. I have known cases where thirteen or fourteen minims were borne; but that is a large dose. In general, seven or eight minims are as much as can be given. I do not know that there is any danger in the œdema induced by the medicine; but it shows that it acts on the body, and therefore it is better to desist. With regard to the gastritic affection, that would be dangerous if the arsenic were continued; but with a careful practitioner, no danger can arise from this remedy. In the chronic form

* The *Tinctura Guiaci Composita.*

of the disease, blisters, setons, and moxæ, may be of use;—just as in any other chronic inflammation.

If the disease assume an intermittent form, you must treat it in some measure as intermittent fever. You must give a large dose of quinine or bark, either just before a paroxysm is expected, or afterwards; and smaller doses in the intervals. Or you may employ arsenic. When rheumatism affects the face, a large dose of a narcotic, given just when the paroxysm is about to begin, often acts like a charm. It is an excellent plan to give a dose of stramonium, at the time the pain is coming on; and to repeat it in two or three hours. A large dose is generally required; and therefore, in the case of an adult, it is better to give a grain. In two or three hours, if there be no alleviation of the pain, and no affection of the head, you may repeat the dose. Sometimes the pain will not cease, till you have exhibited two or three doses; but I do not know more than one or two cases, in which this plan failed. It is certainly one of the best you can adopt. The ill effects of stramonium (as I before mentioned) are dimness of sight, great thirst, and dryness of the throat; but these are not at all dangerous symptoms. The most unpleasant symptom is an affection of the head, drowsiness, giddiness, or delirium. I have frequently seen these induced, and then go away after a few hours; but if there be any hazard, an emetic may be had recourse to. If, however, you increase the dose slowly, this effect need hardly ever occur.

CONCLUSION.

We have now arrived at what I intend to be the conclusion of the course. I have spoken of an immense number of diseases to which flesh is heir; and have endeavoured to tell you all I know about them. Of course I must rejoice (as I am sure you do) that our labours are at an end. That is a natural feeling for both of us. I am sorry to part with you; because I have every reason to be delighted with the attention I have received during the course; yet as we are all anxious for a remission of laborious exertion, I congratulate you that our labours are at a close.

I have endeavoured to speak of all those diseases, which usually come under the care of the medical practitioner. I have not digressed in order to speak of other diseases, and to mention a number of other subjects; because I knew that I had so much on hand, that the time would scarcely be sufficient to do justice to those diseases, which came particularly within my own province. It may be that there are some other diseases which I ought to have spoken of; but I do not think I have omitted any, that are not fully treated of in other courses. I allude to surgical diseases, and to diseases of the female organs of generation; which, although a few of them may come under the treatment of the physician, must be particularly spoken of by the professors of Surgery and Midwifery. I have taken advantage of that circumstance to pass over some affections, which I am in the habit of treating, in private practice, daily. I

hope I have not wasted any time, in displaying my knowledge on topics foreign to this course of lectures; because I had too many topics of my own, to be desirous of saying any thing more than was strictly necessary to my particular department. I have advanced nothing marvellous in order to produce an effect; but I have been anxious simply to inculcate real truth, so far as I myself am aware that it is truth.

You are aware that all the instructions given can be no avail, unless you see the facts, which are stated, verified. Unfortunately, in this institution, we have not the means of giving that instruction which is necessary;* but I believe I may assure you, that before this time twelvemonth, the most active means will he taken for affording clinical, medical, surgical, and obstetric instruction.

I do not know whether it is usual now; but it was the custom, when I was a student, to give advice to the pupils, at the end of a course, as to their future conduct. I am not one of those who are disposed to give much advice; because I suppose every gentleman here knows what is right, and what is wrong. I am sure the attempt to quote Scripture, or preach a sermon to you, would be quite out of place. But there are two things which I am particularly anxious to impress upon you; the first is that, in your profession, you should never lose sight of its really delightful nature. I hope you will never become *mere* practitioners;—going about to see your patients and ordering medicines, just as a baker goes distributing loaves round a parish; but that you will consider it a source of true intellectual delight. There is hardly a case that occurs, that may not afford you an intellectual exercise; and enable you to advance your own knowledge a little. Very few practitioners, I am sure, pass six months in the year, without having an opportunity, not only of advancing their own knowledge, but also of adding to the general stock. If you become mere, dull, routine practitioners, I shall indeed be extremely sorry. I trust you will always consider, that although you enter the profession for the purpose of gaining a livelihood, yet happily, in our pursuits, there is an infinitely greater delight than this;—that we have the means of leading the lives of philosophers;—of using our intellect and improving science; which cannot be said of a large number of occupations, to which men are unfortunately destined.

The other point to which I wish to direct your attention is, to avoid every thing that can bring the profession into disgrace. We all witness medical squabbles; and I think nothing can be more contemptible than personal jealousies, carried on so unfortunately as we often see them. When you are in practice, never give an opinion upon any case, unless it is in your own hands. When a case is under the care of another individual, never should an opinion be given upon it; unless it be to corroborate what he has said, and establish him in the estimation of the patient. If you see a man

* These means have since been supplied, by the erection of the University-College-Hospital.

treating a patient in a disgraceful manner, that is another case; but even then it is much better to see the individual himself, than to make any disturbance about it. When you are attending with another practitioner, nothing should be done to lower him in the opinion of the patient. It is right, if you can, always to express your coincidence of sentiment with a brother-practitioner; and if you differ from him, you should not let the patient know it; but argue the point in private. Never say any thing to make a patient think you would have treated him better than your predecessor. If it so happen that a medical man should ill-treat you, (and we must all expect to meet with that), it is best to keep the matter quiet; for if you complain of being wronged, the world will only shake their heads, and say, significantly, "Two of a trade!—Two of a trade!" —and you will gain nothing by it. When your conscience satisfies you that you are the injured person, it is best to learn to pass things over; and to avoid, as much as possible, any appearance of a medical squabble.

I will not pretend to lamentation and grief at parting with you; because I shall have to part with some every year; and I must reserve my tears and lamentations for more serious occasions. I feel the greatest obligation to you, for the kindness with which you have listened to me; and I owe you an apology, for having frequently been late; but I assure you it was unavoidable. In fine, I can only say, that should any occasion occur of being useful to you, it will afford me the greatest pleasure.

APPENDIX.

No. I.

SYNOPSIS OF CULLEN'S NOSOLOGY.

CLASS I.

PYREXIÆ (FEBRILE DISEASES).

ORDER I.—Febres (Fevers).

Section 1. Intermittentes (Intermittent Fevers).

GENUS 1. Tertiana (Tertian Ague).
Species 1. With Apyrexia interposed.
Variety 1. In the Duration of the Paroxysm.
2. In the Recurrence of the Paroxysm.
3. In the Symptoms.
4. In its Complication with other Diseases.
5. In its Commencement.
Species 2. With a Remission interposed.

GENUS 2. Quartana (Quartan Ague).
Species 1. With Apyrexia interposed.
Variety 1. In its Type.
2. In its Symptoms.
3. In its Complication with other Diseases.
Species 2. With a Remission interposed.

GENUS 3. Quotidiana (Quotidian Ague).
Species 1. With Apyrexia interposed.
Variety 1. Solitary.
2. Combined.
Species 2. With a Remission interposed.

Section 2. Continuæ (Continued Fevers).

GENUS 4. Synocha (Ardent Fever).
5. Typhus (Low Fever).
Species 1. Petechialis (accompanied by Petechiæ),
Variety 1. Mitior.
2. Gravior.
Species 2. Icterodes (Yellow Fever).

GENUS 6. Synochus (Mixed Fever).

Section 3. Hectica (Hectic Fever).

ORDER II.—Phlegmasiæ (Inflammations).

GENUS 7. Phlogosis (Inflammation).

Species 1. Phelgmone (Suppurative Inflammation).
Variety 1. In its Form.
2. In its Seat.
Species 2. Erythema (Superficial Inflammation).
Variety 1. In its Violence.
2. In its Remote Cause.
3. In being Complicated.
Sequela 1. Apostema (an Abscess).
2. Gangræna (Gangrene).
3. Sphacelus (Mortification).

Genus 8. Ophthalmia (Inflammation of the Eye).
Species 1. Idiopathica (Idiopathic).
Variety 1. Membranorum (affecting the Globe).
2. Tarsi (affecting the Lids).
Species 2. Symptomatica (Symptomatic).
Variety 1. From Disease of the Eye itself.
2. From Disease of Other Parts.

Genus 9. Phrenitis (Inflammation of the Brain).
10. Cynanche (Sore-Throat).
Species 1. Tonsillaris (Inflammation of the Tonsils).
2. Maligna (Malignant Sore-Throat).
3. Trachealis (Croup).
4. Pharyngea (Inflammation of the Pharynx).
5. Parotidea (Mumps).

Genus 11. Pneumonia (Inflammation of the Lungs).
Species 1. Peripneumonia (affecting the Substance).
Variety 1. Simple.
2. Complicated.
Species 2. Pleuritis (affecting the Surface).
Variety 1. Simplex (Simple).
2. Complicata (Complicated).
3. Symptomatica (Symptomatic).
4. Falsa (False).
Sequela 1. Vomica (Pulmonary Abscess).
2. Empyema (Pleuritic Effusion).

Genus 12. Carditis (Inflammation of the Heart).
Species 1. Idiopathica (Idiopathic).
2. Symptomatica (Symptomatic).

Genus 13. Peritonitis (Inflammation of the Peritoneum).
Species 1. Propria (confined to the Peritoneum).
2. Omentalis (extending to the Omentum).
3. Mesenterica (extending to the Mesentery).

Genus 14. Gastritis (Inflammation of the Stomach).
Species 1. Idiopathica (Idiopathic).
Variety 1. From Internal Causes.
2. From External Causes.
Species 2. Symptomatica (Symptomatic).

Genus 15. Enteritis (Inflammation of the Intestines).
Species 1. Idiopathica (Idiopathic).
Variety 1. Phlegmonodea (Phlegmonous).
2. Erythematica (Erythematic).
Species 2. Symptomatica (Symptomatic).

Genus 16. Hepatitis (Inflammation of the Liver).
Species 1. Acuta (Acute).
2. Chronica (Chronic).

Genus 17. Splenitis (Inflammation of the Spleen).
18. Nephritis (Inflammation of the Kidney).

Species 1. Idiopathica (Idiopathic).
2. Symptomatica (Symptomatic).

Genus 19. Cystitis (Inflammation of the Bladder).
Species 1. From Internal Causes.
2. From External Causes.

Genus 20. Hysteritis (Inflammation of the Womb).
21. Rheumatismus (Rheumatism).
Species 1. Lumbago (in the Loins).
2. Ischiatica (in the Hip).
3. Pleurodynia (in the Chest).
Sequela. Arthrodynia (Pain in the Joints).

Genus 22. Odontalgia (Tooth-Ache).
23. Podagra (Gout).
Variety 1. Regularis (Regular).
2. Atonica (Atonic).
3. Retrogada (Retrocedent).
4. Aberrans (Wandering).
Genus 24. Arthropuosis (Scrofulous Inflammation of the Joints).

Order III.—Exanthemata (Eruptive Fevers).

Genus 25. Variola (Small-Pox).
Species 1. Discreta (Distinct).
2. Confluens (Confluent).

Genus 26. Varicella (Chicken-Pock).
27. Rubeola (Measles).
Species 1. Vulgaris (Common).
Variety 1. With Severe Symptoms.
2. With Cynanche.
3. With a Putrid Tendency.
Species 2. Variolodes (with Larger Papulæ).

Genus 28. Scarlatina (Scarlet Fever).
Species 1. Simplex (without Sore-Throat).
2. Cynanchica (with Ulcerating Sore-Thoat).

Genus 29. Pestis (the Plague).
30. Erysipelas (Rose-Fever).
Species 1. Vesiculosum (with Large Vesicles).
2. Phlyctœnodes (with Small Vesicles).

Genus 31. Miliaria (Miliary Eruption).
32. Urticaria (Nettle-Rash).
33. Pemphigus (Bleb).
34. Aphtha (Thrush).

Order IV.—Hæmorrhagiæ (Hæmorrhages).

Genus 35. Epistaxis (Bleeding at the Nose).
Species 1. Idiopathica (Idiopathic).
Variety 1. In the Young, with Arterial Plethora.
2. In the Old, with Venous Plethora.
Species 2. Symptomatica (Symptomatic).
Variety 1. From Internal Causes.
2. From External Causes.

Genus 36. Hæmoptysis (Bleeding from the Lungs).
Section 1. Idiopathic Species.
Species 1. Plethorica (from Plethora).
2. Violenta (from Violence).
3. Phthisica (from Phthisis).
4. Calculosa (with Calcareous Expectoration).
5. Vicaria (from Suppressed Evacuation).

Section 2. Symptomatic Species.
Species 1. Pneumonica (dependent on the Lungs).
2. Exanthematica (connected with Cutaneous Eruptions).
3. Hydropica (occasioned by Dropsy).
4. Cachectica (arising from Weakness).
Sequela. Phthisis (Pulmonary Consumption).
Species 1. Incipiens (without Purulent Expectoration).
2. Confirmata (with Purulent Expectoration).

Genus 37. Hæmorrhois (Bleeding from the Rectum).
Species 1. Tumens (from External Piles).
Variety 1. Cruenta (Sanguineous).
2. Mucosa (Mucous).
Species 2. Procidens (with Prolapsus Recti).
3. Fluens (from Internal Piles).
4. Cæca (without Discharge of Blood).

Genus 38. Menorrhagia (Bleeding from the Womb).
Species 1. Rubra (without Pregnancy).
2. Abortus (with Pregnancy).
3. Lochialis (after Delivery).
4. Vitiorum (from Local Disease).
5. Alba (Serous, without Pregnancy).
6. Nabothi (Serous, with Pregnancy).

Hæmorrhagiæ plerumque Symptomaticæ (Hæmorrhages generally Symptomatic).
1. Stomacace (Bleeding from the Gums).
2. Hæmatemesis (Bleeding from the Stomach).
3. Hæmaturia (Bleeding from the Urinary Passages).
4. Cystirrhagia (Bleeding from the Bladder).

Order V.—Profluvia (Discharges).

Genus 39. Catarrhus ("A Cold").
Species 1. A Frigore (from Cold).
2. A Contagio (from Contagion).

Genus 40. Dysenteria ("The Flux").
Variety 1. Accompanied by Worms.
2. With Fleshy Dejections.
3. Accompanied by Intermittent Fever.
4. Without Blood.
5. Accompanied by a Miliary Eruption.

CLASS II.

NEUROSES (NERVOUS DISEASES).

Order I.—Comata (Lethargic Affections).

Genus 41. Apoplexia (Apoplexy).

Section 1. Idiopathica (Idiopathic).

Species 1. Sanguinea (from Effusion of the Blood).
2. Serosa (from Effusion of Serum).
3. Hydrocephalica ("Water in the Head").
4. Atrabilaria (occurring in a Melancholy Temperament).
5. Traumatica (from Wounds).
6. Venenata (from Poisons).
7. Mentalis (from Mental Causes).
8. Cataleptica (attended by Catalepsy).
9. Suffocata (Asphyxia).

Section 2. Symptomatica (Symptomatic).
Species 1. With Intermittent Fever.
2. With Continued Fever.
3. With Inflammations.
4. With Eruptions.
5. With Hysteria.
6. With Epilepsy.
7. With Gout.
8. With Worms.
9. With Retention of Urine.
10. With Scurvy.

Genus 42. Paralysis (Palsy).

Section 1. Idiopathic Species.
Species 1. Partialis (confined to certain Muscles).
2. Hemiplegica (of one side of the Body).
Variety 1. In a Plethoric Habit.
2. In a Leucophlegmatic Habit.
Species 3. Paraplegica (of the Upper or Lower Half of the Body).
4. Venenata (from Poisons).

Section 2. Symptomatic Species.

Tremor.
Species 1. Asthenic.
2. Paralytic.
3. Convulsive.

Order II.—Adynamiæ (Diseases of Debility).

Genus 43. Syncope (Fainting).

Section 1. Idiopathic Species.
Species 1. Cardiaca (from Disease of the Heart).
2. Occasionalis (from Disease of the Whole System).
Section 2. Symptomatic Species.

Genus 44. Dyspepsia (Indigestion).

Section 1. Idiopathic Species.
2. Symptomatic Species.
Species 1. From Disease of the Stomach itself.
2. From Disease of Another Part.

Genus 45. Hypochondriasis ("The Vapours").
46. Chlorosis ("Green-Sickness").

Order III.—Spasmi (Spasms).

Section 1. Affecting the Animal Functions.

Genus 47. Tetanus (Locked-Jaw).
Variety 1. Tetanus (affecting the Whole Body).
2. Trismus (affecting the Lower Jaw).
Species 1. Nascentium (Affecting Infants).
2. Traumaticus (from Wounds).

Genus 48. Convulsio (Convulsion).
Species 1. Idiopathic.
2. Symptomatic.

Genus 49. Chorea ("St. Vitus's Dance").
50. Raphania ("Cripple-Disease").
51. Epilepsia ("Falling-Sickness").

Section 1. Cerebralis (without an Aura).
2. Sympathetica (with an Aura).
3. Occasionalis (from Irritation).

Variety 1. From Injury to the Head.
2. From Pain.
3. From Worms.
4. From Poison.
5. From a Repelled Eruption.
6. From Indigestion.
7. From Mental Emotion.
8. From Hæmorrhage.
9. From Debility.

Section 2. Affecting the Vital Functions.

Genus 52. Palpitatio (Palpitation).
53. Asthma (Asthma).
Species 1. Spontaneum (without Manifest Cause).
2. Exanthematicum (from a Repelled Eruption).
3. Plethoricum (from Plethora).

Genus 54. Dyspnœa (Difficult Respiration).
Division 1. Idiopathic Species.
Species 1. Catarrhalis (with Viscid Expectoration).
2. Sicca (without Expectoration).
3. Aerea (depending on the Weather).
4. Terrea (with Calculous Expectoration).
5. Aquosa (with Œdematous Feet).
6. Pinguedinosa (from Obesity).
7. Thoracica (from Thoracic Deformity).
8. Entrinseca (from External Causes).
Division 2. Symptomatic Species.
Species 1. In Disease of the Heart.
2. With an Abdominal Tumour.
3. In Various Diseases.

Genus 55. Pertussis (Hooping-Cough).

Section 3. In the Natural Functions.

Genus 56. Pyrosis ("Water-Brash").
57. Colica ("The Gripes").
Division 1. Idiopathic Species.
Species 1. Spasmodica (Common Colic).
Variety 1. Passio Ileaca (with Stercoraceous Vomiting).
2. Ileus (followed by Inflammation).
Species 2. Pictonum (arising from Lead).
3. Stercorea (from Constipation).
4. Accidentalis (from Acrid Ingesta).
5. Meconialis (from Retained Meconium).
6. Callosa (with Stricture of the Intestines).
7. Calculosa (with Intestinal Calculi).
Division 2. Symptomatic Species.

Genus 58. Cholera ("Bowel-Complaint").
Division 1. Idiopathic Species.
Species 1. Spontanea (Indian Cholera).
2. Accidentalis (from Acrid Ingesta).
Division 2. Symptomatic Species.

Genus 59. Diarrhœa ("Looseness").
Division 1. Idiopathic Species.
Species 1. Crupulosa (with Liquid Feces).
2. Biliosa (with Yellow Feces).
3. Mucosa (with Mucous Feces).
4. Cœliaca (with Dejections of Chyle).
5. Lienteria (with Dejections of Food).
6. Hepatirrhœa (with Dejections of Blood).
Division 2. Symptomatic Species.

Genus 60. Diabetes (Excess of Urine).
Division 1. Idiopathic Species.
Species 1. Mellitus (with Saccharine Urine).
2. Insipidus (with Insipid Urine).
Division 2. Symptomatic Species.

Genus 61. Hysteria (Hysterics).
Variety 1. From Amenorrhœa.
2. From Menorrhagia.
3. From Leucorrhœa.
4. From Visceral Obstruction.
5. From Disorder of the Stomach.
6. From Venereal Desire.

Genus 62. Hydrophobia (Dog-Madness).
Species 1. Rabiosa (with a Desire of Biting).
2. Simplex (without a Desire of Biting).

Order IV.—Vesaniæ (Mental Derangements).

Genus 63. Amentia (Idiocy).
Species 1. Congenita (from Malformation of the Brain).
2. Senilis (from Age).
3. Acquisita (from Accidental Causes).

Genus 64. Melancholia (Despondency).
Variety 1. With Excessive Dread of Disease.
2. Stultorum Paradisus (Fool's Paradise).
3. Erotomania (with Satyriasis or Nymphomania).
4. Religious Melancholy.
5. Pigritia (with Disinclination to Exertion).
6. With Restlessness and Impatience).
7. Tedium Vitæ (Weariness of Life).
8. Lycanthropia (prowling like a Wolf).

Genus 65. Mania (Madness).
Section 1. Idiopathic Species.
Species 1. Mentalis (from Suffering of the Mind).
2. Corporea (from Bodily Disorder).
3. Obscura (without Evident Cause).
Section 2. Symptomatic Species.
Species 1. From Poison.
2. From Fever.

Genus 66. Oneirodynia (Sleep-Walking).
Species 1. Activa (exciting to Motion).
2. Gravans (the "Night-Mare").

CLASS III.

CACHEXIÆ (DISEASES ARISING FROM A BAD HABIT OF BODY).

Order 1.—Marcores (Diseases of Emaciation).

Genus 67. Tabes (Emaciation with Hectic).
Species 1. Purulenta (from an Ulcer).
2. Scrofulosa (from Scrofula).
3. Venenata (from Poison).

Genus 68. Atrophia (Emaciation, without Hectic).
Species 1. Inanitorum (from Excessive Evacuation).
2. Famelicorum (from Deficient Nourishment).
3. Cacochymica (from Improper Food).

Order II.—Intumescentiæ (Enlargements).

Section 1. Adiposæ (Fatty Swellings).

Genus 69. Polysarcia (Excessive Obesity).

Section 2. Flatuosæ (Flatulent Swellings).

Genus 70. Pneumatosis (Emphysema).
Species 1. Spontanea (without Evident Cause).
2. Traumatica (from a Wound of the Chest).
3. Venenata (from Poison).
4. Hysterica (with Hysterics).

Genus 71. Tympanites ("Drum-Belly").
Species 1. Intestinalis (in the Intestines).
2. Abdominalis (in the Peritoneal Cavity).

Genus 72. Physometra (Flatus in the Womb).

Section 3. Aquosæ (Dropsies).

Genus 73. Anasarca (Subcutaneous Dropsy).
Species 1. Serosa (from Redundant Serum).
2. Oppilata (from Compression of the Veins).
3. Exanthematica (following Eruptive Diseases).
4. Anæmia (from Hæmorrhage).
5. Debilium (from General Weakness).

Genus 74. Hydrocephalus (Water in the Head).
75. Hydrorachitis (Spina Bifida).
76. Hydrothorax (Water in the Chest).
77. Ascites (Abdominal Dropsy).
Species 1. Abdominalis (in the Peritoneal Cavity).
Variety 1. From Compression of the Veins.
2. From Weakness.
3. From Tenuity of the Blood.
Species 2. Saccatus (in the Ovary).

Genus 78. Hydrometra (Uterine Dropsy).
79. Hydrocele (Water in the Tunica Vaginalis).

Section 4. Solidæ (Solid Tumours).

Genus 80. Physconia (Abdominal Tumour).
81. Rachitis (Rickets).

Order III.—Impetigines (Cachectic Spots).

Genus 82. Scrofula ("The King's-Evil").
Species 1. Vulgaris (in the Subcutaneous Glands).
2. Mesenterica (in the Mesenteric Glands).
3. Fugax (Temporary).
4. Americana (accompanying Frambœsia).

Genus 83. Syphilis ("The Pox").
84. Scorbutus (Scurvy).
85. Elephantiasis (Elephant-Leg).
86. Lepra (Leprosy).
87. Frambœsia (Yaws).
88. Trichoma (Polish Plait).
89. Icterus (Jaundice).

Section 1. Idiopathic Species.
Species 1. Calculosus (from Gall-Stones).
2. Spasmodicus (from Spasm of the Gall-Ducts).
3. Hepaticus (from Diseases of the Liver).
4. Gravidarum (from Pregnancy).
5. Infantum (arising soon after Birth).

Section 2. Symptomatic Species.

CLASS IV.

LOCALES (LOCAL DISEASES).

Order 1.—Dysæsthesiæ (Impaired Feelings).

Genus 90. Caligo (Cataract).
Species 1. Lentis (from Opacity of the Lens).
2. Corneæ (from Opacity of the Cornea).
3. Pupillæ (from Obstruction of the Pupil).
4. Humorum (from Depravity of the Aqueous Humour).
5. Palpebrarum (from Defect in the Eye-Lids).

Genus 91. Amaurosis (Nervous Blindness).
Species 1. Compressionis (from Cerebral Congestion).
2. Atonica (from Debility).
3. Spasmodica (from Spasm).
4. Venenata (from Poison).

Genus 92. Dysopia (Depraved Vision).
Species 1. Tenebrarum (requiring a Strong Light).
2. Luminis (requiring a Weak Light).
3. Dissitorum (not seeing Distant Objects).
4. Proximorum (not seeing Near Objects).
5. Lateralis (seeing only Objects situated Obliquely).

Genus 93. Pseudoblepsis (False Vision).
Species 1. Imaginaria (seeing Unreal Objects).
2. Mutans (seeing Real Objects in Unreal Shapes).

Genus 94. Dysecœa (Deafness).
Species 1. Organica (from Structural Disease of the Ear).
2. Atonica (without Structural Disease of the Ear).

Genus 95. Paracusis (Depraved Hearing).
Species 1. Imperfecta (hearing Real Sounds incorrectly).
2. Imaginaria (hearing Unreal Sounds).

Genus 96. Anosmia (Loss of Smell).
Species 1. Organica (from Disease of the Schneiderian Membrane).
2. Atonica (without Disease of the Schneiderian Membrane).

Genus 97. Ageustia (Loss of Taste).
Species 1. Organica (from Structural Disease of the Tongue).
2. Atonica (without Structural Disease of the Tongue).

Genus 98. Anæsthesia (Loss of Touch).

Order II.—Dysorexiæ (Impaired Appetites).

Section 1. Depraved Appetites.

Genus 99. Bulimia (Voracity).
Division 1. Idiopathic Species.
Species 1. Helluonum (without Disease of the Stomach).
2. Syncopalis (from Hunger threatening Syncope).
3. Emetica (followed by Vomiting).
Division 2. Symptomatic Species.

Genus 100. Polydipsia (Excessive Thirst).
101. Pica (Dirt-Eating).
102. Satyriasis (Excessive Venereal Desire in Males).
Species 1. Juvenalis (without Disorder of the System).
2. Furens (with Disorder of the System).

Genus 103. Nymphomania (Excessive Venereal Desire in Females).
104. Nostalgia (Home-Sickness).
Species 1. Simplex (without Other Diseases).
2. Complicata (with Other Diseases).

Section 2. Deficient Appetites.

Genus 105. Anorexia (Want of Appetite for Food).
Species 1. Humoralis (from Humours in the Stomach).
2. Atonica (from Weakness of the Stomach).

Genus 106. Adipsia (Want of Thirst).
107. Anaphrodisia (Want of Venereal Desire).

Order III.—Dyscinesiæ (Difficult Motions).

Genus 108. Aphonia (Loss of Voice).
Species 1. Gutturalis (from Swelling of the Throat).
2. Trachealis (from Compression of the Trachea).
3. Atonica (from Division of the Laryngeal Nerves).

Genus 109. Mutitas (Dumbness).
Species 1. Organica (from Disease of the Tongue).
2. Atonica (from Disease of the Nerves).
3. Surdorum (from Deafness).

Genus 110. Paraphonia (Impaired Voice).
Species 1. Puberum (from Puberty).
2. Rauca (Hoarseness).
3. Resonans (with Obstruction of the Nostrils).
4. Palatina (from Cleft-Palate).
5. Clangens (with a Ringing-Sound).
6. Comatosa (from Relaxation produced by Coma).

Genus 111. Psellismus (Stammering).
Species 1. Hæsitans (with Frequent Repetitions).
2. Ringens (aspirating the Letter "R").
3. Lallans (pronouncing "R" like "L").
4. Emolliens (changing Letters into "S").
5. Balbutiens (a Redundancy of Labial Letters).
6. Acheilos (a Deficiency of Labial Letters).
7. Lagostomatum (a Defect in Guttural Letters).

Genus 112. Strabismus (Squinting).
Species 1. Habitualis (from Using only One Eye).
2. Commodus (from the Greater Mobility of One Eye).
3. Necessarius (from a Change in the Eye itself).

Genus 113. Dysphagia (Difficult Deglutition).
114. Contractura (Contraction of the Limbs).
Species 1. Primaria (from Contraction of the Muscles).
Variety 1. From Inflammation.
2. From Spasm.
3. From Palsy of the Antagonist Muscles.
4. From Irritation.
Species 2. Articularis (from Rigidity of the Joints).

Order IV.—Apocenoses (Excessive Discharges).

Genus 115. Profusio (a Flow of Blood).
116. Ephidrosis (Excess of Perspiration).
117. Epiphora (Lachrymation).
Species 1. Idiopathic.
2. Symptomatic.

Genus 118. Ptyalismus (Salivation).
Species 1. Idiopathic.
2. Symptomatic.

Genus 119. Enuresis (Involuntary Flow of Urine).
Species 1. Atonica (from Disease of the Sphincter of the Bladder).
2. Irritata (from Irritation of the Bladder).

Genus 120. Gonorrhœa (Preternatnral Discharge from the Urethra).
Species 1. Pura (without Impure Connexion).
2. Impura (after Impure Connexion).
Sequela. Gonorrhœa Mucosa (a Gleet).
Species 3. Laxorum (without Erection, but with Venereal Desire).
4. Dormientium (a Discharge of Semen while Asleep).

Order V.—Epischeses (Retained Excretions).

Genus 121. Obstipatio (Costiveness).
Species 1. Debilium (from Weakness).
2. Rigidorum (in Persons of a Rigid Fibre).
3. Obstructorum (with Colic).

Genus 122. Ischuria (Retention of Urine).
Species 1. Renalis (arising from the Kidney).
2. Uretica (arising from the Ureter).
3. Vesicalis (arising from the Bladder).
4. Urethralis (arising from the Urethra).

Genus 123. Dysuria (Difficulty in passing Urine).
Species 1. Ardens (accompanied by Heat).
2. Spasmodica (from Spasm).
3. Compressionis (from Pressure).
4. Phlogistica (from Inflammation).
5. Irritata (from Urinary Calculi).
6. Mucosa (with a copious Excretion of Mucus).

Genus 124. Dyspermatismus (Difficult Emission of Semen).
Species 1. Urethralis (from Disease of the Urethra).
2. Nodosus (from Nodes of the Corpora Cavernosa).
3. Præputialis (from a Narrow Orifice of the Prepuce).
4. Mucosus (from Mucus obstructing the Urethra).
5. Hypertonicus (from a too Vigorous Erection).
6. Epilepticus (from an Epileptic Spasm).
7. Apractodes (from Inactivity of the Genital Organs).
8. Refluus (from the Semen flowing into the Bladder).

Genus 125. Amenorrhœa (Deficiency of the Catamenia).
Species 1. Emansionis (Non-Appearance at Puberty).
2. Suppressionis (Disappearance after their Establishment).
3. Difficilis (Sparing and Painful Evacuation of the Menses).

Order VI.—Tumores (Tumors).

Genus 126. Aneurysma (Aneurism).
127. Varix (Partial Dilatation of a Vein).
128. Ecchymoma (Diffusion of Blood).
129. Scirrhus (Malignant Induration).
130. Cancer (Ulcerated Schirrus).
131. Bubo (a Suppurating Tumor of a Gland).
132. Sarcoma (a Fleshy Tumor).
133. Verruca (a Wart).
134. Clavus (a Corn).
135. Lupia (an Encysted Tumor).
136. Ganglion (a Tumor on a Tendon).
137. Hydatis (Bladder-Worm).
138. Hydrarthrus (White-Swelling).
139. Exostosis (a Bony Tumor).

Order VII.—Ectopiæ (Dislocations).

Genus 140. Hernia (a Covered Dislocation of a Soft Part).

Genus 141. Prolapsus (a Naked Dislocation of a Soft Part).
142. Luxatio (a Dislocation of a Hard Part).

Order VIII.—Dialyses (Solutions of Continuity).

Genus 143. Vulnus (a Wound).
144. Ulcus (an Ulcer).
145. Herpes (Tetter, or Shingles).
146. Tinea (Scald-Head, or Ringworm).
147. Psora ("the Itch").
148. Fractura (a Fracture).
149. Caries (Ulceration of a Bone).

No. II.

COAGULATION OF THE BLOOD.

Blood coagulates, when it has escaped from the body, whether it be warm or cold, in the air or in vacuo, diluted (within certain limits) or undiluted, at rest or in motion. While within the vessels, rest (which causes a cessation of intercourse between the motionless portion and the general mass) always disposes it to coagulate. Yet its coagulation, after escaping from the body, is said to be accelerated by motion; by a high temperature; by a vessel calculated to preserve its heat; by a vacuum; by the stream from the blood-vessel being slow; and, in short, by every circumstance which favours the escape of carbonic-acid-gas. Professor Brande obtained two cubic inches of carbonic acid from every ounce of blood; but Dr. Scudamore less than half a cubic inch from six ounces. The quantity is said to be much greater after a meal, and much less when the blood is buffy. It is said to be proportioned to the quantity of carbonic-acid-gas evolved;—the latter being given off during the coagulation, and ceasing to escape when the coagulation is complete. Galvanism and oxygen-gas raise the temperature of blood, and hasten its coagulation; while carbonic-acid-gas, nitrogen, and hydrogen, have opposite effects. The coagulation of the blood is ascribed, by John Hunter, to its life; by Mr. Thackrah, on the contrary, to its death;—because the separation of a portion of the blood from the whole mass, by its escaping from a vessel, is likely to kill it if alive; because every change likely to impair life (such as debility and fainting) promotes coagulation; and because blood frozen (which process is likely to kill it if alive) and again thawed, instantly coagulates. But if Dr. Scudamore's experiments be accurate,—though others have not found the same results,—coagulation appears, in most cases, to be attributable merely to the escape of carbonic acid; and as coagulated blood, or fibrin, becomes vascular, we can hardly (if the fluid be alive) regard a coagulum as necessarily dead. Large quantities of blood are found fluid, in every dead body;—showing that the simple loss of vitality is not sufficient to cause coagulation. Indeed, the blood of the heart and vessels is found, most frequently, in opposite states;—fluid in one part, and coagulated in another; yet it is all equally dead. From all these contradictory circumstances, I regard the coagulation of the blood as quite unconnected with its vitality or its lifelessness, and as entirely a chemical result. That it is influenced, however, by the vital properties of the containing vessels, is possible; but these properties may operate upon the blood, in this respect, as a mere chemical compound; and even if it be alive, and they influence its life, still the influence, as far as respects coagulation, may in effect be chemical.

The blood generally coagulates in the living body, on escaping from its vessels, and even in its vessels, if its motion be prevented by ligatures. When it does not, its subsequent escape from the body almost always produces instant coagulation. John Hunter mentions the coagulation of blood let out from the tunica vaginalis;

in which it had lain fluid for sixty-five days after a wound. It almost always coagulates, likewise, in the vessels which run through healthy parts to others in a state of mortification; and in large vessels adjoining a pulmonary abscess;—in which cases, the *final* cause is prevention of hæmorrhage. The *efficient* cause, however, in all these examples, is unknown. In all of them, the blood is still in contact with living parts; and in the two last, it is not at rest till it coagulates. John Hunter mentions that, after mortification of the foot and leg, he found the crural and iliac arteries completely filled with strongly coagulated blood; and adds, that this could not have arisen from rest; because, if that were the case, the same thing ought to happen in amputation, or in any case where the larger vessels are tied up. Besides, coagulation after extravasation, or when a portion of blood in a vessel is included between two ligatures, is not an invariable occurrence. These facts, in addition to those stated above, show that fluidity or coagulation is not dependent on the simple presence or absence of vitality. Whatever connexion coagulation *out* of the body may have with the escape of carbonic acid gas, there is no proof of it in the case of coagulation *in* the body. Some have thought that heat is evolved during the coagulation of the blood; while others have denied it. The latest experimenter (Scudamore) supports the opinion.

To suppose an affinity of the red particles for either the lymph or the serum, is erroneous. Leewwenhock and Hartsoeker long since proved, that serum merely suspends them; for if, when separated, they be triturated with serum, part of them is taken up, and the serum assumes a red colour; but if the fluid be allowed to settle in a cylindrical glass, they slowly precipitate themselves to the bottom; and the serum above becomes clear as before. When blood is drawn, the *serum* easily separates on the coagulation of the lymph; but the *lymph* coagulates before the colouring particles have time to fall to the bottom; and, from entangling them, acquires a red colour;—thus forming the crassamentum. If, however, the lymph be thinner, and coagulate slowly, (as in the case of a phlogistic diathesis, and pregnancy), the greater specific gravity of the cruor, detaches it very considerably from the lymph, which remains colourless above;—constituting what is called the inflammatory coat, crust, or buff. Berzelius even believes the lymph to be in a state of solution in the serum, while the cruor is simply suspended in this solution. In the phlogistic diathesis, both the fibrin and the serum are more abundant, and the blood lighter. Thinness of the blood, and a disposition to slow coagulation, generally co-exist. But the rapidity of the stream greatly affects the rate of coagulation; so that one portion of the same blood *coagulates slowly* when *drawn quickly*, and another *quickly* when drawn *slowly*.

The appearance of the buffy coat, does not *arise* from slow coagulation; though *increased* by it; for, of two portions of the same blood, one has afforded no buffy coat; although it remained fluid at least ten minutes after the buffy coat began to be formed on the other. If, as appears from Mr. Hewson's experiments, the buffy coat arise from the thinness of the fibrin, while the red particles continue of their usual weight,—the above circumstance proves, that slow coagulation is not altogether dependent on mere thinness of the blood, though generally connected with it, and proportional to it. Yet, when the blood is thin, rapid coagulation, by means of a slow stream, may prevent the formation of a buffy coat;—by not allowing time for the difference between the weight of the fibrin, and that of the red particles, to effect a separation. The stirring of such blood has the same consequence; and the slower the coagulation of thin blood, (occasioned, for instance, by rapid bleeding), the greater will be the buffy coat. The different cups of blood drawn in an inflammatory disease, may vary as to the buffy coat, according to accidental variations in the stream; but generally it is the *first* cup that abounds in buff, and frequently the *last* has none. This occurs when there is no difference in the stream; so that if the buff arise from thinness of the serum, we must conclude (with Hewson) that its qualities may be changed even during bleeding. Dr. Scudamore finds much more fibrin in buffy blood; and consequently concludes that, not merely the *thinness* of the blood (as Hewson found), but likewise its *quantity* may vary during the flow of blood. The greater the strength of the patient, and the intensity of the inflammation, the firmer is

the coagulum of fibrin, and the more cupped its appearance. Dr. Scudamore did not find a buffy coat in blood drawn immediately after violent exercise.

The blood of different brutes coagulates in different periods of time. Mr. Thackrah imagines the rapidity of coagulation to be inversely as the strength and size of the animal. Thus while healthy human blood coagulates in from three to four minutes, the blood of the horse and the ox coagulates in from two to fifteen; that of dogs, sheep, rabbits, and fowls, in from half a minute to three minutes; and in mice and fish in a moment.—*Dr. Elliotson's Translation of Blumenbach's "Elements of Physiology;" Fourth Edition; Pages* 12 *to* 15.

No. III.

CIRCULATION OF THE BLOOD.

Most physiologists grant to the capillaries irritability, tonicity, or organic contractility; but some deny that *arteries* possess muscular properties. Bichat's objections are,—the absence of contraction on the application of the stimuli to them; the much greater resistance of the middle coat, than of muscular parts to a distending force; and, lastly, the difference between the changes it undergoes, and those which are undergone by muscles,—both spontaneously and from the action of other substances. Berzelius has multiplied the latter description of proofs. However this may be, I must remark, in the first place, that the capillaries certainly have vital powers of contraction, as fully as any parts of the body. This appears in their various degrees of *local* dilatation and contraction, from inflammation, passions of the mind, &c. When different stimuli are applied to them, they are seen (by the aid of the microscope) to experience various degrees of contraction and dilatation; and this even after connexion with the heart has been cut off, by absolute extirpation of that organ. In similar circumstances, when a new stimulus was applied, the blood was often seen, by Dr. Hastings, to cease to flow, but still to oscillate. If the capillaries be allowed to possess organic contractility, it is impossible to say at what point of the arterial tract that property begins to be possessed.

Evident muscular fibres are not necessary to irritability. The iris and the uterus are strongly endowed with this property; but their muscularity is disputed by many. No muscularity is discernible in the plant called *Dionæa Muscipula*, or in "the sensitive-plant," or in those zoophytes which appear to be mere gelatinous masses; yet contractility dependent on life is very manifest in them. Verschuir actually found the larger arteries contract on irritating them with a scalpel, in fifteen out of twenty experiments. Dr. L. Bikker, and J. J. Vandembos, assert the same of the aorta, and Van Geuns of the carotid, when influenced by electricity. Zimmerman, Bichat, and Magendie, saw the arteries contract upon the application of acids; but the two last considered it to be *chemical* change. Dr. Hastings, however, saw the same from the application of ammonia. John Hunter found the posterior or tibial artery of a dog contract, so as nearly to prevent any blood from passing through it, on merely being laid bare; and facts similar to this are mentioned by Drs. Hastings, Fowler, Jones, and Parry. The fact, therefore, that continued contraction, and alternate contraction and relaxation, are occasioned in arteries by the application of stimuli, is certain; and although some have not succeeded in stimulating them, we must remember that others have failed in the application of electricity to parts indisputably muscular; Verschuir, for instance, in the case of the heart and urinary bladder, and Zimmerman in other parts of known muscularity. Dr. Hastings caused contraction in *veins*, as well as arteries, by the application of stimuli.

Dr. Parry instituted a number of experiments on this question. After exactly ascertaining the circumference of arteries in animals, he killed them, and again

measured the circumference; after a lapse of many hours, when life must have been perfectly extinguished, he measured the circumference a third time. Immediately after death, the circumference was found greatly diminished; and, on the third examination, it had increased again. The first contraction arose from the absence of the blood, which had distended the vessel, and antagonized its efforts to contract. It was evidently *muscular* (or, to speak correctly, *organic*) contraction; because when vitality had ceased, and this kind of contraction could no longer exist, the vessel, on the third examination, was always found enlarged. The forced state of distention in arteries, was proved by the contraction which immediately occurred on making a puncture in a portion of a vessel included between two ligatures. An experiment of Magendie's has equal weight. He fixed a ligature on the whole of a dog's leg, except the crural artery and vein. The two latter were then compressed; and, upon wounding the *vein*, the *artery* completely emptied itself. The capacities of arteries are thus always accomodated to the quantity of blood they have to contain; and this circumstance enables the arterial canal to partake so much of the properties of a rigid tube, that an impulse at the mouth of the aorta, is instantly communicated throughout the canal. This appears to be the great design of the contractile power of arteries; for they do not incessantly dilate and contract to any amount,—as many imagine. Dr. Parry, on the most careful examination, could never discover the least dilatation in them, during the systole of the ventricle,—when the pulse is felt. Dr. Hastings declares he has seen it, as does also Magendie, in the case of the aorta and carotid of the horse; but, from the number and accuracy of Dr. Parry's experiments, I incline to believe it does not occur, to any considerable extent, in the ordinary undisturbed state of the circulation. Dr. Parry plunged his arm into the thorax of a horse, and found the aorta constantly full, nearly to bursting, and not perceptibly varying in distention for an instant; though he held it during five minutes, and examined it afterwards again. The vena cava, on the other hand, was so empty at every expiration, as to feel only like a flaccid thin membrane. The fact that, from a wounded artery, there is a *continued* stream, only *augmented* at each pulsation of the heart, is thought by Megendie to prove that the arteries assist in propelling the blood; but an opening takes off so much of the resistance to the course of the blood, that the vessel cannot but contract between the impulses of the heart.

Although the blood is constantly streaming onwards, the pulse is felt only when arteries are more or less compressed; in which case the progress of the blood, which is forced onwards by the impulse of a fresh portion from the left verticle, is impeded; and this effort of the fluid against the obstructing cause, gives the sensation called "the pulse." The pulse follows the stroke of the heart, later and later as the arteries recede from the heart; though the interval is, in general, too minute to be appreciated. Dr. Barry found no pulsation in the aorta of the horse, unless he compressed it violently. The elastic coat both *assists* and *antagonizes* the muscular;—assists it in preventing distention, when the distending process is very strong, and antagonizes it (tends to prevent the canal from becoming too narrow) when it attempts to contract the vessel excessively. Independently of the whole quantity of blood, and of the heart's action, particular arteries may be in various degrees of distention, according to the various states of their individual contraction. When there is a whitlow on a finger, for example, the digital branches are found larger than usual at the very roots of the fingers; and, in many affections, the pulse differs for a time in the two wrists. In fact, the condition of the arteries may vary like that of the capillaries; and probably it does vary, every time that the circulation in a part is altered; although Dr. Parry's opinion holds true during the tranquil and ordinary condition of the circulation. I am thus inclined both to agree with and to differ from Dr. Parry and Dr. Hastings; for I believe the former is right as to the ordinary state of the circulation, and the latter as to any irregularity. The *elastic* power is said to be greater in the arteries, and the *muscular* in the capillaries; and as the *muscular* power is proved, by Dr. Parry's experiments, to be able to overcome the *elastic* power in the *arteries*, it must be very considerable in the *capillaries*.

Dr. Curry, the late Senior Physician, and distinguished Lecturer of the Practice of Medicine at Guy's Hospital, concluded (without doubt, hypothetically) that

the circulation is indispensably facilitated by a sort of electric repulsion between the blood-vessels and their contents; and that, in an inflammatory accumulation, —the tone of the vessels being impaired,—this repulsion is diminished; and the blood, in consequence, passes onwards with difficulty. He grounded this opinion on some microscopic experiments on inflammation, which he had made in the presence once of Mr. Charles Bell, and once of Mr. Travers.

Although *variations* of dilatation in vessels, must affect the course of the blood through them, it is difficult to conceive how any *regular* action of them can assist it, while the blood is propelled and drawn by the heart. In some microscopical experiments, in which obstruction was produced, the influence of the heart was seen, by Dr. Hastings, to extend to arteries, capillaries, and veins; for the blood in them all received a sensible impulse, at each contraction of the verticles. Indeed we have ocular proof that, in the ordinary state of things, the capillaries do not contract on the blood; for the blood in them, as well as in the arteries and veins may be seen (in a frog's foot under a microscope) to move in an unvarying stream, for an hour together; neither becoming finer alternately, nor experiencing impulses.

In fœtuses without hearts, it is not proved that the muscular system carries on the circulation by its own power; because a twin without a heart has never been seen, unless accompanied by a perfect fœtus, the heart of which might circulate the blood of both. The placentæ often communicate; so that one child has died of hæmorhage from the umbilical cord of the other; and, in the only instance in which the matter was ascertained, the fœtus which was without a heart, was actually injected through the navel-string of the perfect fœtus. When, however, the blood is not moved by the heart, the capillaries do impel it. Dr. Wilson Philip once saw it moving freely in the mesenteric capillaries of a rabbit, for an hour and a quarter after the excision of the heart. Haller and Bichat made similar observations, Mr. Burns, anxious to prove that the arteries are of more importance than the heart, and that they themselves circulate the blood which they receive, mentions one among other examples of diseased heart, in which both ventricles (except about a cubic inch at the apex) were as completely ossified as the cranium. In this case there had been no palpitation or pain in the heart; but as bony ventricles cannot contract, or be easily moved, palpitation could not readily have occurred, and pain rarely attends the ossification of any part. That the circulation was deranged, is proved by the woman having experienced great dyspnœa, and expectoration, and dropsy. The auricles were healthy, and thicker than usual; and had evidently performed the duty of the ventricles; through which, as an unchanging reservoir between the auricles and the pulmonary artery and aorta, the auricles drove the blood. The invariable langour of the circulation, in cases where the action of the heart is languid, proves the power of the heart in the circulation. On the other hand, the large arteries of the extremities are continually found ossified, without any apparent deficiency in the circulation. I have seen long tracts of vessels in the lower extremities ossified, where no such circumstance had been suspected. Mr. Burns himself mentions an instance of the arteries of the head, pelvis, legs, and arms being almost entirely ossified, while the heart and aorta were healthy; and yet the man clearly died of diseased liver, induced by hard living, a hot climate, &c.—*Elliotson's "Blumenbach;" Fourth Edition; Pages* 100 *to* 106.

No. IV.

DR. FLETCHER'S PHYSIOLOGICAL CLASSIFICATION OF DISEASES.

FIRST DIVISION.

ORGANIC DISEASES.

INFLAMMATION.

I. *Respiratory Organs.*—1. Laryngitis. 2. Cynanche Trachealis. 3. Bronchitis. 4. Peripneumonia. 5. Peripneumonia Notha. 6. Pleuritis.

II. *Circulating Organs.*—1. Carditis. 2. Rheumatism of the Heart. 3. Pericarditis. 4. Arteritis. 5. Phlebitis. 6. Splenitis.

III. *Digestive Organs.*—1. Cynanche Pharyngea. 2. Inflammation of the Gullet. 3. Gastro-Enteritis. 4. Hepatitis. 5. Inflammation of the Pancreas. 6. Peritonitis.

IV. *Urinary Organs.*—1. Nephritis. 2. Cystitis.

V. *Genital Organs.*—1. Orchitis. 2. Hysteritis. 3. Inflammation of the Mamma.

VI. *Nostrils, Eyes, Ears, and Mouth.*—1. Ophthalmia Tarsi. 2. Ophthalmia Membranorum. 3. Iritis. 4. Otitis. 5. Cynanche Parotidea. 6. Cynanche Tonsillaris. 7. Glossitis. 8. Parulis. 9. Odontalgia.

VII. *Integuments.*—1. Strophulus. 2. Lichen. 3. Prurigo. 4. Rubeola. 5. Scarlatina. 6. Urticaria. 7. Roseola. 8. Erythema. 9. Furunculus. 10. Anthrax. 11. Phlegmasia Dolens.

VIII. *Organs of Thought.*—1. Myelitis. 2. Neuralgia. 3. Encephalitis. 4. Arachnitis.

IX. *Organs of Voluntary Motion.*—1. Inflammation of the Bones. 2. Periostitis. 3. Inflammation of the Ligaments. 4. Rheumatism. 5. Gout.

INDURATION, HYPERTROPHY, AND STRICTURE.

I. *Respiratory Organs.*—1. Enlarged Bronchi. 2. Hepatization of the Lungs.

II. *Circulating Organs.*—1. Induration of the Heart. 2. Hypertrophy of the Heart. 3. Aneurism of the Heart. 4. True Aneurism of the Arteries. 5. Varix of the Veins (Cirsocele, Varicocele, &c.). 6. Varix of the Thoracic Duct. 7. Stricture of the Apertures of the Heart (Cyania). 8. Stricture of the Arteries (Dry Gangrene). 9. Stricture of the Veins. 10. Stricture of the Thoracic Duct. 11. Induration of the Spleen. 12. Hypertrophy of the Spleen.

III. *Digestive Organs.*—1. Stricture of the Gullet. 2. Stricture of the Pylorus. 3. Stricture of the Gall-Ducts. 4. Stricture of the Colon. 5. Stricture of the Rectum. 6. Induration of the Liver. 7. Hypertrophy of the Liver. 8. Induration of the Pancreas. 9. Hypertrophy of the Pancreas.

IV. *Urinary Organs.*—1. Hypertrophy of the Bladder. 2. Stricture of the Urethra.

V. *Genital Organs.*—1. Induration of the Testicles. 2. Hypertrophy of the Testicles. 3. Induration of the Vesiculæ Seminales. 4. Hypertrophy of the Vesiculæ Seminales. 5. Induration of the Prostate Gland. 6. Hypertrophy of the Prostate Gland. 7. Induration of the Scrotum. 8. Hypertrophy of the Scrotum. 9. Induration of the Uterus. 10. Hypertrophy of the Uterus. 11. Induration of the Labia. 12. Hypertrophy of the Labia. 13. Stricture of the Vas Deferens. 14. Stricture of the Fallopian Tube.

VI. *Nostrils, Eyes, Ears, and Mouth.*—1. Induration of the Cornea (Leucoma, Albugo, &c.). 2. Hypertrophy of the Cornea (Staphyloma, &c.). 3. Induration of the Lens (Cataract). 4. Hypertrophy of the Lens. 5. Induration of the Vitreous Humour (Glaucoma). 6. Hypertrophy of the Vitreous Humour. 7. Stricture of the Nasal Duct (Fistula Lachrymalis). 8. Fistula of the Eustachian Tube.

VII. *Integuments.*—1. Induration of the Cuticle. 2. Hypertrophy of the Cuticle (Lepra, Psoriasis, Plica Polonica, Pityriasis, and Icthyosis). 3. Induration of the Cutis. 4. Hypertrophy of the Cutis (Vitiligo and Elephantiasis). 5. Induration of the Cellular Tissue. 6. Hypertrophy of the Cellular Tissue (Barbadoes-Leg and Scleroma).

VIII. *Organs of Thought.*—Induration of the Brain.

IX. *Organs of Voluntary Motion.*—1. Hyperostosis. 2. Exostosis. 3. Anchylosis.

POLYPI, TEETH, &c.

I. *Respiratory Organs.*—Polypi of the Bronchi.

II. *Circulating Organs.*—Polypus of the Heart.

III. *Digestive Organs.*—1. Polypus of the Gullet. 2. Polypus of the Stomach. 3. Polypus of the Colon. 4. Polypus of the Rectum. 5. Teeth, &c. in the Stomach.

IV. *Urinary Organs.*—1. Polypi of the Bladder. 2. Polypi of the Urethra. 3. Teeth, &c. in the Kidney. 4. Teeth, &c. in the Bladder.

V. *Genital Organs.*—1. Polypi of the Uterus. 2. Teeth, &c. in the Testicle. 3. Teeth, &c. in the Uterus. 4. Teeth, &c. in the Ovary.

VI. *Nostrils, Eyes, Ears, and Mouth.*—1. Polypi of the Nostrils. 2. Polypi of the Curuncula Lachrymalis (Encanthis, Pterygium, &c.).

ADHESION.

I. *Respiratory Organs.*—Adhesion of the Pleura.

II. *Circulating Organs.*—Adhesion of the Pericardium.

III. *Digestive Organs.*—Adhesion of the Peritoneum.

IV. *Genital Organs.*—Adhesion of the Tunica Vaginalis.

V. *Organs of Thought.*—Adhesion of the Arachnoid Coat.

OSSIFICATION.

I. *Respiratory Organs.*—1. Ossification of the Laryngeal Cartilages. 2. Ossification of the Pleura.

II. *Circulating Organs.*—1. Ossification of the Heart. 2. Ossification of the Pericardium. 3. Ossification of the Arteries. 4. Ossification of the Veins. 5. Ossification of the Conglohate Glands. 6. Ossification of the Spleen.

III. *Digestive Organs.*—1. Ossification of the Gullet. 2. Ossification of the Stomach. 3. Ossification of the Gall-Ducts. 4. Ossification of the Peritoneum.

IV. *Genital Organs.*—1. Ossification of the Testicle. 2. Ossification of the Tunica Vaginalis. 3. Ossification of the Uterus. 4. Ossification of the Ovary.

V. *Organs of Thought.*—1. Ossification of the Spinal Marrow. 2. Ossification of the Brain. 3. Ossification of the Arachnoid Coat.

VI. *Organs of Voluntary Motion.*—Ossification of the Tendons.

HYDATIDS.

I. *Respiratory Organs.*—Hydatids in the Bronchi.

II. *Circulating Organs.*—1. Hydatids in the Heart. 2. Hydatids in the Spleen. 3. Hydatids in the Thyroid Gland.

III. *Digestive Organs.*—1. Hydatids in the Liver. 2. Hydatids in the Peritoneum.

IV. *Urinary Organs.*—Hydatis in the Kidney.

V. *Genital Organs.*—1. Hydatids in the Uterus (Hydrometra). 2. Hydatids in the Fallopian Tube.

VI. *Organs of Thought.*—1. Hydatids in the Brain. 2. Hydatids in the Arachnoid Coat.

VII. *Organs of Voluntary Motion.*—1. Hydatids in the Bones. 2. Hydatids in the Muscles.

WORMS.

I. *Respiratory Organs.*—Worms in the Bronchi.

II. *Digestive Organs.*—1. Worms in the Intestines. 2. Worms in the Gall-Ducts.

III. *Urinary Organs.*—1. Worms in the Kidney. 2. Worms in the Bladder.

IV. *Genital Organs.*—Worms in the Ovary.

V. *Nostrils, Eyes, Ears, and Mouth.*—Worms under the Tunica Adnata.

VI. *Integuments.*—Worms under the Skin.

TUBERCLES.

1. *Respiratory Organs.*—1. Tubercles in the Lungs. 2. Tubercles in the Pleura.

II. *Circulating Organs.*—1. Tubercles in the Heart. 2. Tubercles in the Pericardium. 3. Tubercles in the Conglohate Glands. 4. Tubercles in the Spleen.

III. *Digestive Organs.*—1. Tubercles in the Stomach. 2. Tubercles in the Intestines. 3. Tubercles in the Liver. 4. Tubercles in the Pancreas. 5. Tubercles in the Peritoneum.

IV. *Urinary Organs.*—Tubercles in the Kidney.

V. *Genital Organs.*—1. Tubercles in the Testicle. 2. Tubercles in the Uterus. 3. Tubercles in the Ovary. 4. Tubercles in the Mamma.

VI. *Organs of Thought.*—1. Tubercles in the Spinal Marrow. 2. Tubercles in the Brain. 3. Tubercles in the Arachnoid Coat.

VII. *Organs of Voluntary Motion.*—Tubercles in the Bones.

ENCEPHALOID TUMOURS.

I. *Respiratory Organs.*—Encephaloid Tumour of the Lungs.

II. *Digestive Organs.*—Encephaloid Tumour of the Stomach.

III. *Genital Organs.*—1. Encephaloid Tumour of the Testicle. 2. Encephaloid Tumour of the Ovary. 3. Encephaloid Tumour of the Mamma.

IV. *Nostrils, Eyes, Ears, aud Mouth.*—Encephaloid Tumour of the Eye.

V. *Integuments.*—Encephaloid Tumour of the Dermoid Tissue.

VI. *Organs of Thought.*—1. Encephaloid Tumour of the Spinal Marrow. 2. Encephaloid Tumour of the Brain.

VII. *Organs of Voluntary Motion.*—Encephaloid Tumour of the Bones.

SCIRRHUS.

I. *Circulating Organs.*—1. Scirrhus of the Heart. 2. Scirrhus of the Thyroid Gland.

II. *Digestive Organs.*—1. Scirrhus of the Gullet. 2. Scirrhus of the Cardia. 3. Scirrhus of the Pylorus. 4. Scirrhus of the Colon. 5. Scirrhus of the Rectum.

III. *Urinary Organs.*—Scirrhus of the Kidney.

IV. *Genital Organs.*—1. Scirrhus of the Testicle. 2. Scirrhus of the Scrotum. 3. Scirrhus of the Penis. 4. Scirrhus of the Mamma.

V. *Nostrils, Eyes, Ears, and Mouth.*—1. Scirrhus of the Nostrils. 2. Scirrhus of the Parotid Gland. 3. Scirrhus of the Tongue. 4. Scirrhus of the Lips.

VI. *Organs of Thought.*—1. Scirrhus of the Spinal Marrow. 2. Scirrhus of the Brain.

CALCULI.

I. *Respiratory Organs.*—Calculi in the Bronchi.

II. *Circulating Organs.*—Calculi in the Heart.

III. *Digestive Organs.*—1. Calculi in the Intestines. 2. Calculi in the Gall-Ducts (Jaundice). 3. Calculi in the Pancreatic Duct.

IV. *Urinary Organs.*—1. Calculi in the Kidney. 2. Calculi in the Bladder. 3. Calculi in the Urethra.

V. *Genital Organs.*—1. Calculi in the Prostate Gland. 2. Calculi in the Vesiculæ Seminales. 3. Calculi in the Uterus.

VI. *Nostrils, Eyes, Ears, and Mouth.* — Calculi in the Salivary Ducts (Ranula).

VII. *Organs of Voluntary Motion.*—Calculi in the Bursæ Mucosæ.

DERANGED SECRETIONS.

I. *Circulating Organs.*—1. Adipose Tumour of the Heart. 2. Bronchocele.

II. *Digestive Organs.*—1. Diarrhœa. 2. Dysentery. 3. Cholera. 4. Pyrosis.

III. *Urinary Organs.*—Diabetes.

IV. *Genital Organs.*—1. Gonorrhœa. 2. Leucorrhœa. 3. Adipose Tumour of the Ovary.

V. *Nostrils, Eyes, Ears, and Mouth.*—1. Catarrh. 2. Ptyalism.

VI. *Integuments.*—1. Acne. 2. Molluscum. 3. Sebaceous Tumours. 4. Polysarcia.

VII. *Organs of Voluntary Motion.*—Adipose Tumour of the Muscles.

DEPOSITIONS OF SERUM.

I. *Respiratory Organs.*—1. Œdema of the Glottis. 2. Œdema of the Lungs. 3. Hydrothorax.

II. *Circulating Organs.*—Dropsy of the Pericardium.

III. *Digestive Organs.*—Ascites.

IV. *Genital Organs.*—1. Hydrocele. 2. Dropsy of the Ovary.

V. *Nostrils, Eyes, Ears, and Mouth.*—1. Hydrophthalmia. 2. Aphtha.

VI. *Integuments.*—1. Erysipelas. 2. Pompholyx. 3. Vaccinia 4. Varicella. 5. Miliaria. 6. Herpes. 7. Rupia. 8. Eczema. 9. Anasarca.

VII. *Organs of Thought.*—1. Hydrorachitis. 2. Hydrocephalus.

VIII. *Organs of Voluntary Motion.* — 1. Rachitis. 2. Mollities Ossium. 3. Hydrarthrus. 4. Hygroma.

DEPOSITIONS OF BLOOD.

I. *Respiratory Organs.*—1. Hæmoptysis. 2. Pulmonary Apoplexy. 3. Hæmathorax.

II. *Digestive Organs.*—1. Hæmatemesis. 2. Hæmorrhois.

III. *Urinary Organs.*—1. Hæmaturia. 2. Cystirrhagia.

IV. *Genital Organs.*—1. Hæmatocele. 2. Menorrhagia.

V. *Nostrils, Eyes, Ears, and Mouth.*—1. Epistaxis. 2. Chemosis. 3. Scorbutus.

VI. *Integuments.*—Purpura.

VII. *Organs of Thought.*—1. Sanguineous Palsy. 2. Apoplexy.

DEPOSITIONS OF AIR.

I. *Respiratory Organs.*—1. Emphysema of the Lungs. 2. Pneumathorax.

II. *Circulating Organs.*—Air in the Pericardium.

III. *Digestive Organs.*—1. Intestinal Tympanites. 2. Peritoneal Tympanites.

IV. *Genital Organs.*—Physometra.

V. *Integuments.*—Pneumatosis.

DEPOSITIONS OF PUS.

I. *Respiratory Organs.*—1. Ulceration of the Larynx. 2. Abscess of the Lungs. 3. Phthisis. 4. Empyema.

II. *Circulating Organs.*—1. Abscess of the Heart. 2. Pus in the Pericardium. 3. Ulceration of the Arteries (False Aneurism). 4. Scrofula. 5. Tabes Mesenterica. 6. Abscess of the Spleen. 7. Abscess of the Thyroid Gland.

III. *Digestive Organs.*—1. Ulceration of the Gullet. 2. Ulceration of the Stomach. 3. Ulceration of the Intestines. 4. Abscess of the Liver. 5. Abscess of the Gall-Ducts. 6. Abscess of the Pancreas. 7. Pus in the Peritoneum.

IV. *Genital Organs.*—1. Abscess of the Testicle. 2. Ulceration of the Scrotum. 3. Ulceration of the Penis (Lues Venerea). 4. Ulceration of the Uterus. 5. Abscess of the Mamma.

V. *Nostrils, Eyes, Ears, and Mouth.*—1. Ozæna. 2. Purulent Ophthalmia. 3. Ulceration of the Cornea. 4. Ulceration of the Iris. 5. Hypopium. 6. Soft Cancer of the Eye. 7. Abscess of the Parotid Gland. 8. Ulceration of the Tongue and Lips. 9. Caries of the Teeth.

VI. *Integuments.*—1. Variola. 2. Impetigo. 3. Porrigo. 4. Ecthyma. 5. Scabies. 6. Sycosis. 7. Framboesia. 8. Ulcers in general.

VII. *Organs of Thought.*—1. Abscess of the Spinal Marrow. 2. Abscess of the Brain. 3. Pus in the Arachnoid Coat.

VIII. *Organs of Voluntary Motion.*—1. Caries of the Bones. 2. Abscess of the Bones (Lumbar Abscess, Morbus Coxarius, White Swelling, Osteosarcoma, &c.). 3. Arthropyosis.

GANGRENE.

All the Organs in the Body are liable to this Disease.

DISPLACEMENTS.

I. *Digestive Organs.*—1. Intus-susception. 2. Hernia. 3. Prolapse of the Anus.

II. *Urinary Organs.*—Cystocele.

III. *Genital Organs.*—1. Prolapse of the Vagina. 2. Prolapse of the Uterus. 3. Inversion of the Uterus. 4. Retroversion of the Uterus. 5. Extra-Uterine Conception. 6. Miscarriage. 7. Difficult Labour.

IV. *Nostrils, Eyes, Ears, and Mouth.*—1. Ectropium. 2. Entropium. 3. Prolapse of the Iris.

V. *Organs of Thought.*—Encephalocele.

VI. *Organs of Voluntary Motion.*—1. Fractures of the Bones. 2. Dislocations of the Joints.

SECOND DIVISION.

FUNCTIONAL DISEASES.

INCREASED ACTIONS.

I. *Respiratory Organs.*—Angina Pectoris.

II. *Digestive Organs.*—1. Spasm of the Gullet. 2. Gastrodynia. 3. Colic.

III. *Nostrils, Eyes, Ears, and Mouth.*—Nyctalopia.

IV. *Organs of Thought.*—Incubus.

V. *Organs of Voluntary Motion.*—1. Spasm of the Sphincter Ani. 2. Spasmodic Ischuria. 3. Priapism. 4. Trismus. 5. Tetanus. 6. Somnambulism.

PERTURBED ACTIONS.

I. *Respiratory Organs.*—Pertussis.

II. *Circulating Organs.*—Palpitation of the Heart.

III. *Digestive Organs.*—Hydrophobia.

IV. *Organs of Thought.*—1. Insanity. 2. Delirium Tremens.

V. *Organs of Voluntary Motion.*—I. Epilepsy. 2. Hysteria. 3. Chorea. 4. Shaking Palsy. 5. Barbiers.

DIMINISHED ACTIONS.

I. *Respiratory Organs.*—1. Asthma. 2. Asphyxia.

II. *Circulating Organs.*—Syncope.

III. *Digestive Organs.*—1. Palsy of the Gullet. 2. Dyspepsia. 3. Chlorosis.

IV. *Nostrils, Eyes, Ears, and Mouth.*—1. Hemeralopia. 2. Amaurosis.

V. *Organs of Thought.*—1. Idiotism. 2. Nervous Apoplexy. 3. Catalepsy.

VI. *Organs of Voluntary Motion.*—1. Palsy of the Tongue. 2. Palsy of the Sphincter Ani. 3. Palsy of the Sphincter Vesicæ. 4. Impotence.

No. V.

SYNOPSIS OF CUTANEOUS DISEASES.

ORDER I.

PAPULÆ (PIMPLES).

GENUS I. Strophulus (Gum-Rash).
Species 1. Strophulus Intértinctus (Red-Gum).
2. Strophulus Albidus (White-Gum).
3. Strophulus Confertus (Tooth-Rash).
4. Strophulus Volaticus (Wildfire-Rash).
5. Strophulus Candidus (Pallid Gum-Rash).

GENUS II. Lichen (Lichenous Rash).
Species 1. Lichen Simplex (Simple Lichen).
2. Lichen Pilaris (Hair-Lichen).
3. Lichen Circumscriptus (Clustered Lichen).
4. Lichen Agrius (Wild Lichen).
5. Lichen Lividus (Livid Lichen).
6. Lichen Tropicus (Prickly Heat).
7. Lichen Urticatus (Nettle-Lichen).

GENUS III. Prurigo (Itching Rash).
Species 1. Prurigo Mitis (Mild Prurigo).
2. Prurigo Formicans (Creeping Prurigo).
3. Prurigo Senilis (Prurigo of Old Age).
4. Prurigo sine Papulis (Local Prurigo).
Variety 1. Prurigo Preputii (Itching of the Prepuce).
2. Prurigo Pubis (Itching of the Pubes).
3. Prurigo Urethralis (Itching of the Urethra).
4. Prurigo Podicis (Itching of the Anus.)
5. Prurigo Scroti (Itching of the Scrotum).
6. Prurigo Pudendi Muliebris (Itching of the Pudendum).

ORDER II.

SQUAMÆ (SCALY DISEASES).

GENUS I. Lepra (Leprosy).
Species 1. Lepra Vulgaris (Common Leprosy).
2. Lepra Alphoides (White Leprosy).
3. Lepra Nigricans (Black Leprosy).

GENUS II. Psoriasis (Dry-Scall).
Species 1. Psoriasis Guttata (Minute Dry-Scall).
2. Psoriasis Diffusa (Spreading Dry-Scall).
3. Psoriasis Gyrata (Tortuous Dry-Scall).
4. Psoriasis Inveterata (Obstinate Dry-Scall).
5. Psoriasis Localis (Local Dry-Scall).
Variety 1. Psoriasis Labialis (Scall of the Lips).
2. Psoriasis Lotorum (Washerwomen's Scall).
3. Psoriasis Palmaria (Scall of the Palm).

4. Psoriasis Ophthalmica (Scall of the Eye-Lids).
5. Psoriasis Pictoria (Baker's Scall).
6. Psoriasis Præputii (Scall of the Prepuce).
7. Psorirasis Scrotalis (Scall of the Scrotum).

Genus III. Pityriasis (Dandriff).
Species 1. Pityriasis Capitis (Dandriff of the Head).
2. Pityriasis Rubra (Red Dandriff).
3. Pityriasis Versicolor (Variegated Dandriff).
4. Pityriasis Nigra (Black Dandriff).

Genus IV. Icthyosis (Fish-Skin).
Species 1. Icthyosis Simplex (Simple Fish-Skin).
2. Icthyosis Cornea (Horny Fish-Skin).

ORDER III.

EXANTHEMATA (RASHES).

Genus I. Rubeola (Measles).
Species 1. Rubeola Vulgaris (Common Measles).
2. Rubeola sine Catarrho (Imperfect Measles).
3. Rubeola Nigra (Black Measles).

Genus II. Scarlatina (Scarlet-Fever).
Species 1. Scarlatina Simplex (Simple Scarlet-Fever).
2. Scarlatina Anginosa (Scarlet-Fever with Sore-Throat).
3. Scarlatina Maligna (Malignant Scarlet-Fever).

Genus III. Urticaria (Nettle-Rash).
Species 1. Urticaria Febrilis (Feverish Nettle-Rash).
2. Urticaria Evanida (Evanescent Nettle-Rash).
3. Urticaria Perstans (Stationary Nettle-Rash).
4. Urticaria Conferta (Confluent Nettle-Rash).
5. Urticaria Subcutanea (Subcutaneous Nettle-Rash).
6. Urticaria Tuberosa (Tumid Nettle-Rash).

Genus IV. Roseola (Rose-Rash).
Species 1. Roseola Æstiva (Summer Rose-Rash).
2. Roseola Autumnalis (Autumnal Rose-Rash).
3. Roseola Annulata (Ring-Formed Rose-Rash).
4. Roseola Infantilis (Infantile Rose-Rash).
5. Roseola Variolosa (Variolous Rose-Rash).
6. Roseola Vaccina (Vaccine Rose-Rash).
7. Roseola Miliaris (Miliary Rose-Rash).

Genus V. Purpura (Scurvy).
Species 1. Purpura Simplex (Petechial Scurvy).
2. Purpura Hæmorrhagica (Land-Scurvy).
3. Purpura Urticans (Nettle-Rash Scurvy).
4. Purpura Senilis (Scurvy of Old-Age).
5. Purpura Contagiosa (Contagious Scurvy).

Genus VI. Erythema (Inflammatory Blush).
Species 1. Erythema Fugax (Fugitive Inflammatory Blush).
2. Erythema Læve (Smooth Inflammatory Blush).
3. Erythema Marginatum (Marginated Inflammatory Blush).
4. Erythema Papulatum (Papulated Inflammatory Blush).
5. Erythema Tuberculatum (Tuberculated Inflammatory Blush).
6. Erythema Nodosum (Nodose Inflammatory Blush).
7. Erythema Intertrigo (Fretted-Skin).

Genus VII. Erysipelas (The Rose).
Species 1. Erysipelas Phlegmonodes (Phlegmonous Erysipelas).
2. Erysipelas Œdematodes (Œdematous Erysipelas).
3. Erysipelas Gangrœnosum (Gangrenous Erysipelas).
4. Erysipelas Erraticum (Wandering Erysipelas).

ORDER IV.

BULLÆ (BLEBS).

Genus I. Pemphigus (Vesicular Fever).
II. Pompholyx (Water-Bleb).
Species 1. Pompholyx Benignus (Mild Water-Bleb).
2. Pompholyx Diutinus (Lingering Water-Bleb).
3. Pompholyx Solitarius (Solitary Water-Bleb).

ORDER V.

PUSTULÆ (PUSTULES).

Variety I. Phlyzacium (Hot Push).
II. Psydracium (Cold Push).
III. Achor (Viscid Push).
IV. Favus (Honeycomb-Push).

Genus I. Impetigo (Humid or Running Scall).
Species 1. Impetigo Figurata (Figured Running-Scall).
2. Impetigo Sparsa (Scattered Running-Scall).
3. Impetigo Erysipelatodes (Erysipelatous Running-Scall).
4. Impetigo Scabida (Crusted Running-Scall).
5. Impetigo Rodens (Corroding Running-Scall).

Genus II. Porrigo (Moist Scall).
Species 1. Porrigo Larvalis (Milk-Scall).
2. Porrigo Furfurans (Branny Scall).
3. Porrigo Lupinosa (Lupine-like Scall).
4. Porrigo Scutulata (Scalled-Head).
5. Porrigo Decalvans (Bald-Scall).
6. Porrigo Favosa (Honeycomb-Scall).

Genus III. Ecthyma (Papulous Scall).
Species 1. Ecthyma Vulgare (Common Papulous Scall).
2. Ecthyma Infantile (Infantile Papulous Scall).
3. Ecthyma Luridum (Lurid Papulous Scall).
4. Ecthyma Cachecticum (Cachectic Papulous Scall).

Genus IV. Variola (Small-Pox).
Species 1. Variola Discreta (Distinct Small-Pox).
2. Variola Confluens (Confluent Small-Pox).
3. Variola Verrucosa (Warty Small-Pox).

Genus V. Scabies (The Itch).
Species 1. Scabies Papuliformis (Rank Itch).
2. Scabies Sympathetica (Watery Itch).
3. Scabies Purulenta (Pocky Itch).
4. Scabies Cachectica (Cachectic Itch).

ORDER VI.

VESICULÆ (VESICLES).

Genus I. Varicella (Chicken-Pox).
Species 1. Varicella Lentiformis (Lenticular Varicella).
2. Varicella Coniformis (Swine-Pox).
3. Varicella Globularis (Hives).

Genus II. Vaccinia (Cow-Pox).
III. Herpes (Tetter).
Species 1. Herpes Phlyctænodes (Miliary Herpes).
2. Herpes Zoster (Shingles).
3. Herpes Circinatus (Ring-Worm).
4. Herpes Labialis (Herpes of the Lips).
5. Herpes Præputialis (Herpes of the Prepuce).
6. Herpes Iris (Rainbow Ring-Worm).

Genus IV. Rupia (Foul Blane).
Species 1. Rupia Simplex (Simple Rupia).
2. Rupia Prominens (Conical Rupia).
3. Rupia Escharotica (Cachectic Rupia).

Genus V. Miliaria (Miliary Eruption).
VI. Eczema (Heat-Eruption).
Species 1. Eczema Solare (Sun-Heat).
2. Eczema Impetiginodes (Impetiginous Eczema).
3. Eczema Rubrum (Inflamed Eczema).

Genus VII. Aphtha (Thrush).
Species 1. Aphtha Lactantium (Infantile Thrush).
2. Aphtha Adultorum (Thrush of Adults).
3. Aphtha Anginosa (Aphtha of the Throat).

ORDER VII.

TUBERCULA (TUBERCLES).

Genus I. Phyma (Boil).
II. Verruca (Wart).
III. Molluscum (Wen).
IV. Vitiligo (Veal-Skin).
V. Acne (Hard Pimple).
Species 1. Acne Simplex (Simple Pimple).
2. Acne Punctata (Maggot-Pimple).
3. Acne Indurata (Stone-Pock).
4. Acne Rosacea (Rosy Drop).

Genus VI. Sycosis (Fig-Pock).
Species 1. Sycosis Menti (Sycosis of the Beard).
2. Sycosis Capillitii (Sycosis of the Scalp).

Genus VII. Lupus (Noli-Me-Tangere).
VIII. Elephantiasis (Black Leprosy).
IX. Bucnemia (Elephant-Leg).
X. Frambœsia (Yaws).

ORDER VIII.

MACULÆ (SPOTS).

Genus. I. Ephelis (Sun-Burn).
II. Nævus (Mother-Marks).
III. Spilus (Mole).
IV. Melanosis (Black-Cancer).
Species 1. Melanosis Diffusa (Diffused Malanosis).
2. Melanosis Concreta (Concrete Melanosis).
3. Melanosis Tumida (Swelling Melanosis).

Genus V. Kirranosis (Yellow Disease).
VI. Cyanosis (Blue Disease).
VII. Coriago (Hide-Bound).*

* In order to make this Synopsis complete, we have followed the example of Dr. Elliotson in adding a few genera, which are not to be found in Willan, and for which we are indebted to Dr. Milligan.

No. VI.

DR. FLETCHER'S TABLE OF POISONS.

PART I.

DISEASES, AND THE PRINCIPAL POISONS WHICH PRODUCE THEM.

FIRST DIVISION.

ORGANIC DISEASES.

I. *Bronchitis.*—Chlorine (from χλωρος, *green*).

II. *Inflammation of the Gullet.*—1. Virusses. 2. Meloe (Blistering-Fly). 3. Atropa (from Ατροπος, one of the Fates). 4. Euphorbia (from Euphorbus, Physician to King Juba). 5. Aconite (derived, by some, from ακονη, *a rock*;—because it grows in rocky places; and, by others, from ακων, *a dart*;—because darts were poisoned with it). 6. Ranunculus (the diminutive of "rana,"—*a frog*;—because it grows in marshy places). 7. Iodine (from ιωδες, *a violet-colour*). 8. *Hydriodate of Potash.* 9. *Oxalic Acid* (from οξυς, *sharp*). 10. Oxalate of Potassa. 11. Sulphuric Acid (from "sal,"—*a salt*; and πυρ, *fire*). 12. Nitric Acid. 13. Nitrate of Potassa. 14. Ammonia (from "Jupiter *Ammon*;"—near whose temple Sal Ammoniac was dug up). 15. Lime. 16. Potassa (so named from having been first made in *pots*). 17. Subcarbonate of Potassa (the *Carbonate* of the new London Pharmacopœia). 18. Black Oxide of Arsenic (probably from αρσην for αρρην, *powerful*). 19. Arsenious Acid (formerly called *White Oxide*). 20. Arsenite of Potassa. 21. Arsenic Acid. 22. Arseniate of Potassa. 23. Arseniuretted Hydrogen (from υδωρ, *water*; and γενναω, *to produce*). 24. Sulphurets of Arsenic. 25. Oxide of Mercury (perhaps Mercury itself in a state of minute division). 26. Muriate of Mercury (the *Bichloride* of the new London Pharmacopœia).

III. *Gastro-Enteritis.*—1. Virusses (Morbid Animal Poisons). 2. Venoms (Natural Animal Poisons). 3. Meloe. 4. Honey. 5. Atropa. 6. Datura (from an Indian word "datiro" of unknown meaning). 7. Strychnia (from στρωννυμι, *to overthrow*), in various Plants. 8. Conium (probably from κωναω, *to turn round*). 9. Cicuta (from "cœcuta,"—*blind*). 10. Colchium (from Colchis, a city where the plant was common). 11. Laurus (from "laus,"—*praise*;—because used for crowns). 12. Euphorbia. 13. Hydrocyanic Acid. 14. Aconitum. 15. Helleborus (from ελειν, *to kill*, βορα, *with food*). 16. Ranunculus. 17. Digitalis (from "digitus,"—*a finger*). 18. Cucumis (from "curvus,"—*bent*). 19. Momordica (from "mordeo,"—*to bite*). 20. Menispermum (from μηνη, *the moon*; and σπερμα, *seed*;—alluding to the crescentic form of the seeds). 21. Juniperus (from "juvenis,"—*young*; and "pario,"—*to bring forth*;—from having young and old berries at the same time). 22. Veratrum (probably from verè atrum,"—*truly black*;—alluding to the root). 23. Agaricus (probably from *Agaria*, an Eastern town). 24. Iodine. 25. Hydriodate of Potassa. 26. Chlorine. 27. Oxalic Acid. 28. Oxalate of Potassa. 29. Phosphorus (from φως, *light*; and φερω, *to carry*). 30. Sulphuric Acid. 31. Hydrosulphuric Acid (Sulphuretted Hydrogen). 32. Hydrosulphate of Potassa. 33. Nitric Acid. 34. Nitrate of Potassa. 35. Ammonia. 36. Lime. 37. Baryta (from βαρυς, *heavy*). 38. Carbonate of Baryta. 39. Mu-

riate of Baryta. 40. Potassa. 41. Subcarbonate of Potassa. 42. Sulphate of Zinc. 43. Muriate of Tin. 44. Black Oxide of Arsenic. 45. Arsenious Acid. 46. Arsenite of Potassa. 47. Arsenic Acid. 48. Arseniate of Potassa. 49. Arseniuretted Hydrogen. 50. Sulphurets of Arsenic. 51. Oxide of Antimony (probably from *αντι, against;* and *μονος, a monk;*—alluding to its early effects on the fraternity). 52. Tartrate of Ammonia (the *Potassio-Tartrate* of the new London Pharmacopœia). 53. Carbonate of Copper (from "cuprum," quasi "cyprium;"—having been brought from Cyprus). 54. Acetate of Copper. 55. Sulphate of Copper. 56. Oxide of Mercury. 57. Muriate of Mercury. 58. Nitrate of Silver. 59. Muriate of Gold.

IV. *Cystitis.*—1. Meloe. 2. Arsenic. 3. Mercury.

V. *Glossitis.*—1. Arum (probably from *αρα, an injury*). 2. Oxalic Acid. 3. Oxalate of Potassa. 4. Sulphuric Acid. 5. Nitric Acid. 6. Nitrate of Potassa. 7. Black Oxide of Arsenic. 8. Arsenious Acid. 9. Arsenite of Potassa. 10. Arsenic Acid. 11. Arseniate of Potassa. 12. Arseniuretted Hydrogen. 13. Sulphurets of Potassa. 14. Oxide of Mercury. 15. Muriate of Mercury.

VI. *Urticaria.*—1. Virusses. 2. Datura.

VII. *Phlegmasia Dolens.*—1. Virusses. 2. Venoms.

VIII. *Arachnitis.*—1. Virusses. 2. Venoms. 3. Meloe. 4. Honey. 5. Cicuta. 6. Alcohol (an Arabian word expressive of excellence). 7. Colchicum. 8. Laurus. 9. Helleborus. 10. Veratrum. 11. Agaricus. 12. Carbonic Oxide (from "*carbo*,"—*a coal*). 13. Carbonic Acid. 14. Sulphurous Acid. 15. Oxide of Antimony. 16. Tartrate of Antimony.

IX. *Jaundice.*—1. Virusses. 2. Venoms.

X. *Dysentery.*—1. Cucumis. 2. Helleborus. 3. Momordica. 4. Juniperus. 5. Arsenic.

XI. *Catarrh.*—Virusses.

XII. *Ptyalism.*—1. Digitalis. 2. Iodine. 3. Hydriodote of Potassa. 4. Nitric Acid. 5. Oxide of Mercury. 6. Muriate of Mercury. 7. Muriate of Gold.

XIII. *Hæmoptysis.*—Chlorine.

XIV. *Hæmatemesis.*—1. Meloe. 2. Oxalic Acid. 3. Oxalate of Potassa. 4. Sulphuric Acid. 5. Nitric Acid. 6. Nitrate of Potassa. 7. Oxide of Mercury. 8. Muriate of Mercury. 9. Muriate of Gold.

XV. *Hæmorrhois.*—1. Meloe. 2. Cucumis. 3. Momordica. 4. Juniperus.

XVI. *Hæmaturia.*—Meloe.

XVII. *Purpura.*—Venoms.

XVIII. *Tympanites.*—1. Agaricus. 2. Black Oxide of Arsenic. 3. Arsenious Acid. 4. Arsenite of Potassa. 5. Arsenic Acid. 6. Arseniate of Potassa. 7. Arseniuretted Hydrogen. 8. Sulphurets of Arsenic.

XIX. *Pneumatosis.*—Venoms.

SECOND DIVISION.

FUNCTIONAL DISEASES.

XX. *Colic.*—1. Oxide of Lead. 2. Carbonate of Lead. 3. Acetate of Lead.

XXI. *Priapism.*—1. Meloe. 2. Datura. 3. Black Oxide of Antimony 4. Arsenious Acid. 5. Arsenite of Potassa. 6. Arsenic Acid. 7. Arseniate of Potassa. 8. Arseniuretted Hydrogen. 9. Sulphurets of Arsenic.

XXII. *Tetanus.*—1. Venoms. 2. Secale (probably from "seco," *to cut*; alluding to the reaping of grain). 3. Datura. 4. Strychnia. 5. Brucea (named from Bruce, the traveller). 6. Cicuta. 7. Hydrocyanic Acid. 8. Aconitum. 9. Ranunculus. 10. Black Oxide of Arsenic. 11. ArseniousAcid. 12. Arsenite of Potassa. 13. Arsenic Acid. 14. Arseniate of Potassa. 15. Arseniuretted Hydrogen. 16. Sulphurets of Arsenic. 17. Oxide of Antimony. 18. Tartrate of Antimony. 19. Oxide of Lead. 20. Carbonate of Lead. 21. Acetate of Lead.

XXIII. *Insanity.*—1. Meloe. 2. Hyoscyamus (from *ις, a swine*; and *κυαμος, a bean*;—hogs being said to use it as a medicine). 3. Atropa. 4. Datura. 5. Conium. 6. Aconitum.

XXIV. *Delirium Tremens.*—1. Solium (Darnel). 2. Alcohol. 3. Hyoscyamus. 4. Atropa. 5. Datura. 6. Nicotiana (from Nicott, who introduced it into Europe). 7. Oxide of Mercury. 8. Muriate of Mercury.

XXV. *Epilepsy.*—1. Virusses. 2. Honey. 3. Secale. 4. Nicotiana. 5. Conium. 6. Cicuta. 7. Colchicum. 8. Laurus. 9. Hydrocyanic Acid. 10. Papaver (from "pappa,"—*pap*; with which nurses used to mix it, for quieting infants). 11. Helleborus. 12. Digitalis. 13. Arum. 14. Menispermum. 15. Veratrum. 16. Agaricus. 17. Carbonic Oxide. 18. Carbonic Acid. 19. Phosphorus. 20. Hydrosulphuric Acid. 21. Hydrosulphate of Potassa. 22. Nitrous Oxide. 23. Baryta. 24. Carbonate of Baryta. 25. Muriate of Baryta. 26. Black Oxide of Arsenic. 27. Arsenious Acid. 28. Arsenite of Potassa. 29. Arsenic Acid. 30. Arseniate of Potassa. 31. Arseniuretted Hydrogen. 32. Sulphurets of Arsenic. 33. Oxide of Antimony. 34. Tartrate of Antimony. 35. Oxide of Lead. 36. Carbonate of Lead. 37. Acetate of Lead. 38. Carbonate of Copper. 39. Acetate of Copper. 40. Sulphate of Copper. 41. Oxide of Mercury. 42. Muriate of Mercury. 43. Nitrate of Silver. 44. Muriate of Gold.

XXVI. *Syncope.*—1. Atropa. 2. Nicotiana. 3. Oxide of Mercury. 4. Muriate of Mercury.

XXVII. *Amaurosis.*—1. Hyoscyamus. 2. Atropa. 3. Datura. 4. Cicuta. 5. Carbonic Oxide. 6. Carbonic Acid.

XXVIII. *Idiotism.*—1. Datura. 2. Aconitum.

XXIX. *Nervous Apoplexy.*—1. Secale. 2. Alcohol. 3. Hyoscyamus. 4. Atropa. 5. Datura. 6. Nicotiana. 7. Strychnia. 8. Brucea. 9. Conium 10. Cicuta. 11. Laurus. 12. Hydrocyanic Acid. 13. Papaver. 14. Digitalis. 15. Agaricus. 16. Carbonic Oxide. 17. Carbonic Acid. 18. Carburetted Hydrogen. 19. Sulphurous Acid. 20. Hydrosulphuric Acid. 21. Hydrosulphate of Potassa. 22. Nitrous Oxide. 23. Baryta. 24. Carbonate of Baryta. 25. Muriate of Baryta. 26. Black Oxide of Arsenic. 27. Arsenious Acid. 28. Arsenite of Potassa. 29. Arsenic Acid. 30. Arseniate of Potassa. 31. Arseniuretted Hydrogen. 32. Sulphurets of Arsenic. 33. Oxide of Antimony. 34. Tartrate of Antimony. 35. Oxide of Lead. 36. Carbonate of Lead. 37. Acetate of Lead. 38. Carbonate of Copper. 39. Acetate of Copper. 40. Sulphate of Copper. 41. Oxide of Mercury. 42. Muriate of Mercury. 43. Nitrate of Silver.

XXX. *Local Palsy.*—1. Oxide of Lead. 2. Carbonate of Lead. 3. Acetate of Lead.

PART II.

POISONS, AND THE PRINCIPAL DISEASES WHICH THEY PRODUCE.

FIRST DIVISION.

ANIMAL POISONS.

I. *Capra* (the Goat).—The flesh, in some circumstances, becomes poisonous on ingestion; and the fluids, in others, by inocculation.

II. *Bos* (the Ox).—The same as Capra.

III. *Sus* (the Hog).—The same as Capra.

IV.—*Ornithorrynchus* (the Duck-Billed Animal).—1. Phlegmasia Dolens. 2. Tetanus.

V. *Phasianus* (the Pheasant-Genus, including the Domestic Fowl).—Gastro-Enteritis.

VI. *Rana* (the Toad).—It is provided with follicles which secrete a fluid of an irritating nature, when applied to the skin.

VII. *Crotalus* (the Rattle-Snake).—1, Gastro-Enteritis. 2. Phlegmasia Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumatosis.

VIII. *Boa* (a genus of Serpents).—1. Gastro-Enteritis. 2. Phlegmasia Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumotosis.

IX. *Coluber* (the Viper, &c.).—1. Gastro-Enteritis. 2. Phlegmasia Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumatosis.

X. *Balistes* (the File-Fish).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XI. *Tetrodon* (a genus of Fishes, found chiefly in Tropical Seas).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XII. *Muræna* (the Eel).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XIII. *Coryphæna* (the Parrot-Fish, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XIV. *Sparus* (a genus of Fishes, inhabiting the Mediterranean, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XV. *Clupæa* (the Herring, Pilchard, Sprat, Anchovy, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XVI. *Melöe* (the Blistering-Fly).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Arachnitis. 5. Hæmatemesis. 6. Hæmorrhois. 7. Hæmaturia. 8. Priapism. 9. Insanity.

XVII. *Apis* (the Bee;—the Honey prepared by it).—1. Gastro-Enteritis. 2. Arachnitis. 3. Epilepsy.

XVIII. *Aranea* (the Spider).—1. Gastro-Enteritis. 2. Phlegmasia Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumatosis.

XIX. *Scorpio* (the Scorpion).—1. Gastro-Enteritis. 2. Phlegmasia Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumatosis.

XX. *Cancer* (the Crab, Lobster, Crawfish, Prawn, Shrimp, &c.).—1. Gastro-Enteritis. 2. Phlegmasia-Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumatosis.

XXI. *Scolopendra* (the Earwig).—1. Gastro-Enteritis. 2. Phlegmasia Dolens. 3. Arachnitis. 4. Jaundice. 5. Purpura. 6. Pneumatosis.

XXII. *Ostrea* (the Oyster).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

XXIII. *Mytilus* (the Mussel).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Urticaria. 4. Arachnitis. 5. Jaundice. 6. Catarrh. 7. Epilepsy.

SECOND DIVISION.

VEGETABLE POISONS.

XXIV. *Secale* (Rye;—when spurred).—1. Gastro-Enteritis. 2. Tetanus. 3. Epilepsy. 4. Nervous Apoplexy.

XXV. *Solium* (Darnel).—1. Gastro-Enteritis. 2. Delirium Tremens.

XXVI. *Hordeum* (Barley;—the Alcohol distilled from it).—1. Arachnitis. 2. Delirium Tremens. 3. Nervous Apoplexy.

XXVII. *Hyoscyamus* (Henbane, &c.).—1. Insanity. 2. Delirium Tremens. 3. Amaurosis. 4. Nervous Apoplexy.

XXVIII. *Atropa* (Deadly Nightshade, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Delirium Tremens. 4. Syncope. 5. Amaurosis. 6. Nervous Apoplexy.

XXIX. *Datura* (Thorn-Apple, &c.).—1. Gastro-Enteritis. 2. Urticaria. 3. Priapism. 4. Tetanus. 5. Insanity. 6. Delirium Tremens. 7. Amaurosis. 8. Idiotism. 9. Nervous Apoplexy.

XXX. *Nicotiana* (Tobacco).—1. Gastro-Enteritis. 2. Delirium Tremens. 3. Epilepsy. 4. Syncope. 5. Nervous Apoplexy.

XXXI. *Strychnia* (in various Plants).—1. Gastro-Enteritis. 2. Tetanus. 3. Nervous Apoplexy.

XXXII. *Brucea* (obtained from False Angustura Bark).—1. Gastro-Enteritis. 2. Tetanus. 3. Nervous Apoplexy.

XXXIII. *Conium* (Hemlock).—1. Gastro-Enteritis. 2. Insanity. 3. Epilepsy. 4. Nervous Apoplexy.

XXXIV. *Cicuta* (Cow-Bane, &c.).—1. Gastro-Enteritis. 2. Arachnitis. 3. Tetanus. 4. Epilepsy. 5. Amaurosis. 6. Nervous Apoplexy.

XXXV. *Colchicum* (Meadow-Saffron).—1. Gastro-Enteritis. 2. Arachnitis. 3. Epilepsy.

XXXVI. *Laurus* (the Laurel, &c.).—1. Gastro-Enteritis. 2. Arachnitis. 3. Syncope. 4. Epilepsy. 5. Nervous Apoplexy.

XXXVII. *Euphorbia* (yielding Gum-Euphorbium, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis.

XXXVIII. *Amygdalus* (the Almond;—containing Hydrocyanic Acid).—1. Gastro-Enteritis. 2. Tetanus. 3. Epilepsy. 4. Nervous Apoplexy.

XXXIX. *Papaver* (the Poppy).—I. Epilepsy. 2. Nervous Apoplexy.

XL. *Aconitum* (Monk's-Wood, Wolf's-Bane, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Tetanus. 4. Insanity. 5. Idiotism.

XLI. *Helleborus* (Black Hellebore, Bear's-Foot, &c.)—1. Gastro-Enteritis. 2. Arachnitis. 3. Dysentery. 4. Epilepsy.

XLII. *Ranunculus* (Crow-Foot, Spear-Wort, Pilewort, &c.).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Tetanus.

XLIII. *Digitalis* (Fox-Glove).—1. Gastro-Enteritis. 2. Ptyalism. 3. Syncope. 4. Epilepsy.

XLIV. *Arum* (Wake-Robin, Dragon's-Wort, &c.).—1. Glossitis. 2. Epilepsy.

XLV. *Cucumis* (Bitter-Apple, &c.).—1. Gastro-Enteritis. 2. Dysentery. 3. Hæmorrhois.

XLVI. *Momordica* (Wild-Cucumber, &c.).—1. Gastro-Enteritis. 2. Dysentery. 3. Hæmorrhois.

XLVII. *Menispermum* (Cocculus Indicus, &c.).—1. Gastro-Enteritis. 2. Epilepsy.

XLVIII. *Juniperus* (Juniper).—1. Gastro-Enteritis. 2. Dysentery. 3. Hæmorrhois.

XLIX. *Veratrum* (White Hellebore, &c.).—1. Gastro-Enteritis. 2. Arachnitis. 3. Epilepsy.

L. *Agaricus* (the Mushroom).—1. Gastro-Enteritis. 2. Arachnitis. 3. Tympanites. 4. Epilepsy. 5. Nervous Apoplexy.

THIRD DIVISION.

MINERAL POISONS.

LI. *Iodine.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Ptyalism.

LII. *Hydriodate of Potash.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Ptyalism.

LIII. *Chlorine.*—1. Bronchitis. 2. Gastro-Enteritis. 3. Hæmoptysis.

LIV. *Carbonic Oxide.*—1. Arachnitis. 2. Epilepsy. 3. Amaurosis. 4. Nervous Apoplexy.

LV. *Carbonic Acid* (Fixed Air).—1. Arachnitis. 2. Epilepsy. 3. Amaurosis. 4. Nervous Apoplexy.

LVI. *Oxalic Acid.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Glossitis. 4. Hæmatemesis.

LVII. *Oxalate of Potassa* (Salt of Sorrel).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Glossitis. 4. Hæmatemesis.

LVIII. *Carburetted Hydrogen.*—Nervous Apoplexy.

LIX. *Phosphorus.*—1. Gastro-Enteritis. 2. Epilepsy.

LX. *Sulphurous Acid.*—1. Arachnitis. 2. Nervous Apoplexy.

LXI. *Sulphuric Acid* (Oil of Vitriol).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Glossitis. 4. Hæmatemesis.

LXII. *Hydrosulphuric Acid* (Sulphuretted Hydrogen).—1. Gastro-Enteritis. 2. Epilepsy. 3. Nervous Apoplexy.

LXIII. *Hydrosulphate of Potassa.*—1. Gastro-Enteritis. 2. Epilepsy. 3. Nervous Apoplexy.

LXIV. *Nitrous Oxide* (Laughing-Gas).—1. Epilepsy. 2. Nervous Apoplexy.

LXV. *Nitric Acid* (Aqua Fortis).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Glossitis. 4. Hæmatemesis.

LXVI. *Nitrate of Potash* (Nitre, or Saltpetre).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Glossitis. 4. Hæmatemesis.

LXVII. *Ammonia* (Spirit of Hartshorn).—1. Inflammation of the Gullet. 2. Gastro-Enteritis.

LXVIII. *Lime.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis.

LXIX. *Baryta.*—1. Gastro-Enteritis. 2. Epilepsy. 3. Nervous Apolexy.

LXX. *Carbonate of Baryta* (Heavy Spar).—1. Gastro-Enteritis. 2. Epilepsy. 3. Nervous Apoplexy.

LXXI. *Muriate of Baryta.*—1. Gastro-Enteritis. 2. Epilepsy. 3. Nervous Apoplexy.

LXXII. *Potassa* (Kali).—1. Inflammation of the Gullet. 2. Gastro-Enteritis.

LXXIII. *Subcarbonate of Potassa* (Salt of Tartar).—1. Inflammation of the Gullet. 2. Gastro-Enteritis.

LXXIV. *Sulphate of Zinc* (White Vitriol).—Gastro-Enteritis.

LXXV. *Muriate of Tin.*—Gastro-Enteritis.

LXXVI. *Black Oxide of Arsenic.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXVII. *Arsenious Acid* (White Arsenic).—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXVIII. *Arsenite of Potassa.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXIX. *Arsenic Acid.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXX. *Arseniate of Potassa.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXXI. *Arseniuretted Hydrogen.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXXII. *Sulphurets of Arsenic.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Dysentery. 6. Hæmatemesis. 7. Tympanites. 8. Priapism. 9. Tetanus. 10. Epilepsy. 11. Nervous Apoplexy.

LXXXIII. *Oxide of Antimony.*—1. Gastro-Enteritis. 2. Arachnitis. 3. Tetanus. 4. Epilepsy. 5. Nervous Apoplexy.

LXXXIV. *Tartrate of Antimony* (Tartar-Emetic).—1. Gastro-Enteritis. 2. Arachnitis. 3. Tetanus. 4. Epilepsy. 5. Nervous Apoplexy.

LXXXV. *Oxide of Lead.*—1. Colic. 2. Tetanus. 3. Epilepsy. 4. Local Palsy.

LXXXVI. *Carbonate of Lead* (White Lead).—1. Colic. 2. Tetanus. 3. Epilepsy. 4. Local Palsy.

LXXXVII. *Acetate of Lead* (Sugar of Lead).—1. Colic. 2. Tetanus. 3. Epilepsy. 4. Local Palsy.

LXXXVIII. *Carbonate of Copper.*—1. Gastro-Enteritis. 2. Epilepsy.

LXXXIX. *Acetate of Copper* (Verdigris).—1. Gastro-Enteritis. 2. Epilepsy.

XC. *Sulphate of Copper* (Blue Vitriol).—1. Gastro-Enteritis. 2. Epilepsy.

XCI. *Oxide of Mercury.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Ptyalism. 6. Hæmatemesis. 7. Delirium Tremens. 8. Epilepsy. 9. Syncope.

XCII. *Muriate of Mercury.*—1. Inflammation of the Gullet. 2. Gastro-Enteritis. 3. Cystitis. 4. Glossitis. 5. Ptyalism. 6. Hæmatemesis. 7. Delirium Tremens. 8. Epilepsy. 9. Syncope.

XCIII. *Nitrate of Silver* (Lunar Caustic).—1. Gastro-Enteritis. 2. Epilepsy.

XCIV. *Muriate of Gold.*—1. Gastro-Enteritis. 2. Ptyalism. 3. Epilepsy.*

No. VII.

DISEASES OF THE PERICARDIUM.

Pericarditis would never be selected to show the advantages of auricular examination. In the *acute* form, at least, it is only of *negative* utility. But the consideration of this disease will prove the injustice of those who assert, that auscultators both regard auscultation as a universal light, and neglect the investigation of general symptoms. On examination by the ear, the whole heart is found acting more forcibly, and with a clearer sound than in health. But this is all. Auscultation appears to me, however, to be of *negative* use. We do not discover the loud murmur, or the sonorous or sibilous rattle of bronchitis, the respiratory rattle or obscure respiratory murmur of pneumonia, or the ægophony of pleuritic effusion, unless these diseases are combined with pericarditis. Neither have we the partially *excessive*, or *defective* impulse or sound, or *preternatural* sounds, of organic diseases of the *heart*. In all *uncombined* cases, therefore, light is thrown on the disease. I remember having once found auscultation of great use in the diagnosis of a disease which might have been considered to be clearly pericarditis. The patient was a poor Irishman; and the Irish are by no means happy in their attempts at a lucid history and description of their diseases. He complained of pain in the region of the heart, increased on pressure; and of palpitation and dyspnœa; and declared he had been ill but a few days. The case appeared to be pericarditis. The pulse was full, and the constitution good. There appeared to be every reason to bleed him freely, and to put the whole antiphlogistic plan in force. But on listening to the heart's action, the left ventricle was found to give a violent, dead, noiseless blow against the chest; and the case was evidently one of hypertrophy of the left ventricle. I insisted to the man that he had long been ill; and it was ascertained from his own mouth, and from his wife, that he had suffered palpitation and dyspnœa for a great length of time; and that the error in the history which he had given, arose from his having been compelled to leave off work only a few days before. He died in a fortnight; and great hypertrophy of the left ventricle was discovered. M. Collier says, that the action of the heart is accompanied by a sound resembling that of new leather. Laennec does not mention it; but remarks the occasional occurrence of a sort of *click*, which some people mistake for a *bruit de soufflet*.

The anatomical characters are little different from those of inflammation of

* We have introduced some modifications into this Table, with the view of increasing its perspicuity.

other serous membranes. Either there is a partial redness (patches),—sometimes as if the membrane were injected, at others as if dyed red; or there are groups of red points. The redness is seldom deep; and, even in the most violent cases, is often very faint. The membrane was never, in a single instance, observed by Laennec to be *thickened*, though Dr. Baillie declares this to be frequently the case; but upon it lies a quantity of fibrin, thicker and more consistent than in pleurisy; and differing from the fibrin of pleurisy, also, in being generally irregular on its surface;—sometimes with minute pores; sometimes with depressions so large, as to give it the appearance of the second stomach of the calf; sometimes knobbed,—like butter (to use Leannec's expression) spread upon two slabs, first approximated, and then suddenly separated from each other. Dr. Baillie says that the fibrin never adheres firmly; Laennec, that it adheres more firmly than in pleurisy. Although the redness is partial, this exudation is most frequently general; and is often very abundant when the redness is slight. It is of the ordinary pale colour. The *serum* effused is in far less proportion to the *fibrin*, than in pleurisy;—seldom amounting to a pint, though it has amounted to *four* pints; and sometimes scarcely any is found. It is of the common whitish lemon-colour; rarely limpid; sometimes very turbid,—containing larger or smaller flocculi of lymph; or absolutely curdled, as if only one kind of effusion had taken place. Sometimes it is bloody; sometimes puriform. Dr. Baillie once saw a *quart* of pus in a pericardium violently inflamed, but free from ulceration. If the inflammation have been very severe, lymph is often found (in more or less quantity) on even the *external* surface of the pericardium;—uniting it by bands to the pleura.

The *substance* of the heart, after pericarditis, may be unchanged; or it may be redder or paler than usual, yellowish or brown, hardened or softened. After the *chronic* disease, it has been found hypertrophied. It is usually when the organ is softened, that we observe the effused serum to be bloody. In the disease which consists in the heart being softened, I have almost always found bloody serum in the pericardium. Not only the *substance* of the heart, but its lining membrane, especially at the valves, is also frequently affected;—sometimes in the *acute* form of pericarditis; but generally in the *chronic*, if very long continued. A case of pericarditis,—the pericardium containing several ounces of turbid fluid, with flakes of lymph, and being covered, in various situations, with a reticulated layer of lymph,—is described by Mr. Stanley, in the seventh volume of the "Medico-Chirurgical Transactions." The substance of the heart was almost black with congealed blood; very soft, and studded with little collections of dark pus. In the majority of cases, disease both of the *substance* of the heart and of the *valves*, arises from, or is coetaneous with, or springs up during, inflammation of the pericardium.

As time elapses after the acute attack of pericarditis, the effused liquid is absorbed; the fibrin grows to the cardiac and parietal portions of the pericardium; and adhesions, more or less partial or general, of cellular or serous membrane are produced. Like those of other serous sacs, these are usually thinner and stronger, the older their date. The adhesions are sometimes very thick and fibrous,—fleshy, as it were; and sometimes even cartilaginous and bony. I have frequently seen the whole cardiac and parietal pericardium coherent; so that no pericardial cavity existed;—the serum being entirely absorbed, and the fibrin nearly so; and such cases have occasionally been mistaken for instances of the absence of the pericardium. Sometimes the fibrin effused becomes cellular; and, contracting no adhesions, lies pale (like lace) on the surface of the heart. Sometimes merely an opaque white patch remains, which can be peeled off; and sometimes, instead of *smooth* patches, we have opaque white granulations. The reason is not obvious why the fibrin within the pericardium sometimes adheres, and sometimes does not. The degree of serous effusion, and the consequent proportionate separation of parts, affords no explanation; because, first, we often see one portion of lymph adherent, while another by its side is not; and, secondly, there is often a total absence of adhesion, without sufficient serous effusion to account for it. The adhesions within the pericardium left after pericarditis, are almost the only instances that occur in this membrane. I have never seen adhesions, except with redness of the membrane, or the presence of turbid fluid, or after the existence of decided

symptoms of pericarditis. In the *pleura* they are continually found, without the least previous symptom of inflammation, and without redness or turbid effusion.

Pericarditis is occasioned by all the causes of inflammation of serous membranes in general. But the most frequent is either exposure to cold,—especially after a warm temperature, and if rheumatism is also adduced; or sympathy with the fibrous membranes of joints attacked by rheumatism. It will occur either simultaneously with the rheumatism, or not till the rheumatism has existed for a longer or shorter period, has even gradually declined, or altogether ceased for some time. It sometimes occurs (though the metastasis is comparatively rare) when the rheumatism suddenly disappears.

Pericarditis is usually not very violent; but is disposed to assume the chronic form; and frequently steals on, as a chronic disease, from the abuse of fermented liquors. In chronic pericarditis, the valves, and finally the substance of the heart, become diseased. From these circumstances, the connection between rheumatism and affection of the heart was first noticed in the stage of organic disease; and rheumatism was said to produce, not inflammation of the pericardium, but disease of the heart. Occasionally the pericardium may not be affected, and occasionally but in a secondary manner; yet of this I am certain, that nearly all the cases of affection of the heart after rheumatism, are originally pericarditis; and that when the *inner* membrane of the heart is thus affected from the first, so also is the pericardium. Among the cases of organic disease of the heart connected with rheumatism, published by Dr. Wells, nearly twenty years ago, in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge," those which proved fatal displayed a complete abolition of the pericardial cavity, or strong or abundant partial adhesions; and those which did not prove fatal, were marked by decided symptoms of pericarditis. In nearly all those mentioned by Sir David Dundas, in the first volume of the "Medico-Chirurgical Transactions," of London, the pericardium was adherent. Every dissection that I have made after death, during the early period of the disease, has proved the case to be violent pericarditis; the history of every chronic case that I have witnessed, could be clearly traced back to pericarditis; and even the least affection of the heart that I have seen take place during rheumatism, has been marked pericarditis. The pleura, particularly of the left side, is occasionally inflamed at the same time; and the subsequent chronic organic disease of the heart, is of every possible variety. Dr. Pitcairn, of St. Bartholomew's Hospital, was the first who noticed, about the year 1788, the connexion of rheumatism with disease of the heart; and Dr. Baillie, in 1797, was the first who published on the subject. They considered the disease to be a morbid growth of the heart. Sir David Dundas, who published on the subject many years afterwards (in 1808), without reference to the observations of these physicians, mentions the disease as dilatation of the heart, and chiefly of the left ventricle; with paleness and softness of its substance, and adherence of the pericardium. He asserts his belief that no account of the matter was to be found in any medical writer;—as though, remarks Dr. Wells, it were easy to suppose him ignorant of what had been published, twelve years before, in so popular a work as Dr. Baillie's "Morbid Anatomy." From the imperfection of Morbid Anatomy in this country, twenty years ago, Dundas's description is very loose. However, in one of Mr. Wells's cases, which proved fatal early, and was opened by Mr. Brodie, nothing but pericarditis was discoverable; and Dr. Wells, who was no less distinguished for his sagacity than for his independence, evidently regarded the rheumatic affection of the heart as inflammatory, by advising copious bleeding at the outset. The disease would appear sometimes to remain, very long, mere pericarditis; or, at least, merely an inflammatory affection; for it is sometimes cured after a lapse of time; and sometimes continues for many years, with no signs of organic disease; and proving troublesome only when cold is accidentally caught, and a fresh attack of rheumatism in the joints is induced.

Most instances of rheumatic pericarditis commence in persons from about the age of puberty to near thirty. We occasionally see it in younger persons; rarely, for the first time, in older. I once saw it in an infant. With neither of Dr. Baillie's remarks,—that pericarditis is not very common, and that it chiefly attacks persons who have been some time adults,—does my experience at all agree. The

French do not appear aware of the connexion of pericarditis with rheumatism, except as an ordinary instance of internal inflammation, upon the sudden retrocession of an external disease.

Acute pericarditis is, of course, attended by more or less pyrexia. There is a pain in the region of the heart, sometimes severe and lancinating; generally darting through to the left scapula, upwards to the left scapula and shoulder, and down the arm, a certain way;—for (what is remarkable) it rarely extends quite so far as the elbow. I lately had a case, in which the pain extended down the forearm; but it did not quite reach the wrist. The pain is increased by pressing forcibly upon, or between the ribs and cartilages over the heart; and by pressing with the points of the fingers upwards against the diaphragm, under the cartilages of the left false ribs;—frequently even by pressing the epigastrium, and left hypochondrium, in the usual manner. The pain is often increased on inspiration, and by lying on the left side. I think patients are usually easiest on the back. The respiration is rapid; but less so than in affections of the lungs. There is sometimes a cough, which is dry; and nearly always palpitation, which is frequently violent,—at least upon exertion. Sometimes, though more rarely, there is a disposition to syncope. The pulse varies exceedingly. It is necessarily quick; and often, but not always, small, in proportion to the heart's action; and only sometimes intermittent and irregular. Neither is it always hard, or even full. The countenance is described as anxious, and the features are contracted; but this, I imagine, happens only when the pain is acute; and is equally the case in pleuritis.

The diagnosis of pericarditis is thought, by many, to be extremely difficult. Laennec declares, that he has frequently suspected it where it was not found, and found it where he had not suspected it. By close inquiry into the existence of all the marks I have mentioned, the diagnosis has never proved difficult to me. I would particularly lay stress upon the extension of the pain from the region of the heart to the scapula, and the shoulder, and a certain way down the arm;—symptoms which patients will not always mention, unless questioned respecting them; together with its increase on strong pressure upon and between the ribs and cartilages over the heart, and upwards under the cartilages of the left false ribs. These two points I do not remember to have seen mentioned anywhere; and the others are not dwelt upon in some of the best books. In Andral's "Clinique Medicale," pain at the epigastrium on pressure, is said to have occurred in some cases; but this point is not spoken of as if inquired into. In one case only is the extension of pain to the arm mentioned; and its extension even to the shoulder, does not seem to have formed an object of inquiry. I am certain that, on a scrutinizing examination, the existence of pericarditis will very rarely be mistaken; and from this conviction, and the frequency of its occurrence during acute rheumatism, I make it as invariable a rule to examine the cardiac region by the touch and hearing, in every case of acute rheumatism, as the usual seats of hernia are examined by us all, in cases of colic and intestinal inflammation. Were this rule universally observed, practitioners would not occasionally be surprised by the death of patients, in what had been considered to be merely acute rheumatism.

I think I have observed free *local* bleeding to be more serviceable than *general*; and that mercury is of equal efficacy in acute pericarditis, as in other acute inflammations;—over which, wherever they may be situated, a very extensive experience of many years has fully satisfied me,—conformably with the observations of many able physicians,—that mercury, possesses far more power than any other medicine. Bleeding, and other ordinary measures, cure diseases of severe inflammation every day; and, in cases of little danger, they may be relied on. But they frequently fail in cases of intensity; and I know that if, in addition to suitable bleeding, mercurial ptyalism is quickly induced, active inflammation will very rarely destroy; and that, not only is fatality almost always prevented, but far less bleeding is required. This has been my practice from the commencement of my professional life; and where I employed mercury with freedom, I have never met with a necessity for those frightful bleedings of quart after quart, recorded from time to time in our publications. I have given the Antimonium Tartarizatum (in quantities of a scruple or half a drachm, every twenty-four hours), hydrocyanic

acid, and other medicines recommended by the Italians; but have found them all greatly inferior to mercury. Among the best, unquestionably, is colchicum; and its power over actual gout and rheumatism of the extremities, is universally acknowledged to be very great. After the violence of acute pericarditis is subdued, it appears of use in restraining the morbid irritability, which sometimes still continues in the heart; and several chronic cases, of which I had despaired, have gradually recovered under perseverence in its use for many months.

The *cellular* side of the pericardium, like that of other serous membranes, is sometimes, though very rarely, the seat of hydatids, cysts, scrofulous and other tubercles, and ossification. The diagnosis must be impossible; and indeed, in some cases, no symptoms have been observable. The pericardium is sometimes the seat of sudden and fatal hæmorrhage, without previous indisposition. Like the arachnoid, it is sometimes perfectly dry. Sometimes it contains air either alone or with a preternatural quantity of fluid;—in the latter of which cases, fluctuation or undulation has occurred. Sometimes the pericardium is absent. At least five unquestionable cases of this singularity are on record.

The quantity of fluid at a certain period of *acute* pericarditis, and in *chronic* pericarditis, is occasionally (though not often) so considerable, that hydrops pericardii exists. The quantity should certainly amount to half a pint, for us to expect inconvenience from it. Unless it be considerable, it is indicated with no more certainty by auscultation and percussion, than by the ordinary symptoms. But if the quantity be large, there is a dull sound, to a great extent, on striking the cardiac region. The heart's action may be perceived very faintly, and perhaps in a diffused manner; so that the epigastrium pulsates or vibrates; and may appear fuller than in health. Patients have experienced a sense of weight in the cardiac region; and even fluctuation has been detected. In cases of copious effusion of blood, pus, or serum, into the pericardium, these symptoms have suddenly appeared; and good examples of the occurrence of some of them may be found in Andral. A fluid occasionally collects in the pericardium (as it does in the pleura, the peritoneum, the arachnoid, and the tunica vaginalis,) by a slow process,—not amounting to inflammation. The membrane is not red but perhaps opaque, and even thickened, and of a satin-whiteness. This condition is, I believe,—where no redness of inflammation is visible,—the common cause of ascites, chronic hydrocephalus, hydrocele, and idiopathic hydrothorax; and though, like the state which gives birth to one kind of adhesions in serous membranes, it may be the result of a change *allied* to inflammation, it hardly merits the title of "inflammation;"—judging from the absence of inflammatory symptoms, the absence of redness in the membrane, the pellucidity of the fluid, and the inutility of anti-inflammatory measures.—*Recent Improvements in the Art of Distinguishing the Various Diseases of the Heart. By John Elliotson, M.D. Pages* 8 *to* 11.

No. VIII.

HEALTHY SOUNDS OF THE HEART.

Besides the impulse which is given by the heart to the left side of the chest, its action affords a distinct sound in health on applying the ear, either immediately to the parietes, or with the intervention of a solid medium. The sound is double; and, indeed, to many persons perceptibly so to *themselves*, on lying upon the left side. The first sound is heard at the moment the pulse is felt in the wrist, or after the smallest possible interval; the second is heard immediately afterwards. The first, according to Laennec, arises from the *ventricular* action; the second from the *auricular*. The first is rather dull and long; the second short and clear;—a kind of smack. After the second, a short pause ensues, before the dull sound of the ventricles, the stroke of the heart's apex, and the pulse at the wrist. The whole period is estimated by Laennec, at about one-half for the *ventricular* contraction, one quarter for the *auricular*, and one quarter for the pause. The

sound of the *auricles* is heard best at the *upper* part of the cardiac region; the sound of the *ventricles*, at the *lower*. The sounds of the *left* auricle and ventricle, are heard best at the cartilages of the fifth, sixth, and seventh left ribs; those of the *right* auricle and ventricle, at the sternum.

When the passage of the blood from either ventricle is materially impeded, the sound which is synchronous with the pulse, and loudest at the lower part of the cardiac region, is changed to a blowing, whizzing, shrill, or cooing character. If the impediment be in the left ventricle,—at the mouth of the aorta, it is loudest at the cartilages of the ribs to the left of the sternum; if in the right ventricle,—at the mouth of the pulmonary artery, it is loudest at the sternum, and to the right. The sound is often so loud, that it prevents the natural sound of the auricles from being distinctly perceptible, till the ear or the stethoscope is removed from the region of the *ventricles*, to a higher place,—the region of the *auricles*.

When the impediment is at either of the auriculo-ventricular openings, the morbid sound is heard at the moment of the auricular contraction;—not synchronously with the radial pulse, and the stroke of the heart's apex; and is generally loudest at the superior part of the cardiac region. It is loudest at the cartilages of the left ribs, when the *left* auriculo-ventricular opening is narrowed;—loudest at the sternum and to the right, when the narrowing is at the *right* auriculo-ventricular opening. When an auriculo-ventricular opening is narrowed, and the morbid sound is heard at the auricular contraction, the action of the auricle is not instantaneous, as in health, but rather slower; so that we can fancy we hear the cavity gradually empty itself. I do not think this slowness so observable in cases of narrowing of the mouth of the pulmonary artery or the aorta.

Laennec's correctness in ascribing the *first* of the two sounds of the heart's action in health to the *ventricle*, and the *second* to the *auricle*, has been called in question;—some asserting that the first sound is the result of the *auricular* contraction, and the second of the *ventricular*; some that they occur at the moment of the *dilatation*, not at the moment of the *contraction* of the cavities; and some that Laennec was right in regard to the *ventricular* sound, but that the second sound cannot arise from the contraction of the auricle; since Harvey, Haller, and Senac, all declare that the auricle may be seen to contract immediately *before* the ventricular action; and they consider, therefore, that the sound which follows the ventricular, is produced by some unknown cause; and that the *auricular* contraction is *without* sound;—two very singular, and very considerable suppositions. The alteration of the sound when the respective openings are narrowed, proves (I think) that Laennec is right; for if the opening from a *ventricle* be narrowed, the healthy sound ascribed by Laennec to the ventricles is altered; and if the opening from an *auricle* be narrowed, the healthy sound ascribed by Laennec to the auricle is altered. An argument in favour of the priority of the auricular contraction, has been deduced from the fact that, in some cases, the veins of the neck regularly swell, immediately before the pulse is felt. But the obstruction in the auricles, causing this swelling, does not (I apprehend) occur during the *contraction* of the auricles; for, at that moment, there is a free space in the ventricles to receive the auricular blood; and it is only a part of the auricle that has the power of contraction. The obstruction which produces the swelling, must take place as the ventricle becomes filled, and the blood consequently, accumulates; and therefore the swelling of the veins must be expected when the ventricles will receive no more; namely, immediately before they contract, or while they are contracting. There is no wonder, therefore, that the arteries, according to this account, beat first; then a second sound of the heart is heard,—I presume the auricular action; and then a short interval occurs before the veins pulsate,—before the blood accumulates in the auricles, previously to their contraction. The jugular veins are said, by some, always to be dilated quite synchronously with the pulse of the arteries.

Since the delivery of these lectures [the Lumleyan, in 1829], Laennec's accuracy has been called in question by others; and the stroke of the heart's apex, and the *first* sound of the heart, have been declared to happen before the pulse; and to be produced by the *dilatation* and *repletion* of the ventricle; and the *second* sound has been said to occur at the moment of the *contraction* of the ventricles, and to arise from the flapping of the parietes of the emptied ventricles together.

I would reply, in the first place, as before, that when an obstruction exists at the mouth of the *aorta* or *pulmonary artery*, a morbid sound occurs at the moment when Laennec supposes the *ventricles* to contract; and when an obstruction occurs at either *auriculo-ventricular* opening, a morbid sound occurs at the moment he supposes the *auricles* to contract. This could not happen had he mistaken the periods of the ventricular and auricular contractions.

Secondly, when the pulse at the wrist follows the stroke of the heart, it does so after only a very minute interval;—such as may be explained by the distance of the radial artery from the heart; and actually occurs decidedly *before* the auricular sound;—that sound which is now declared to be the *ventricular*. Moreover, when the pulse of the wrist is observed to follow the stroke of the heart, the pulse at the innominata (so much nearer the heart) may be found to precede that at the wrist, and to occur all but simultaneously with the stroke of the heart; so that the relative distance of the parts explains the whole difference; and the pulsation of the arteries, in all cases, clearly arises from the stroke of the heart. If an artery still nearer the heart than the innominata be observed, *no* interval between its pulse and the stroke of the heart is perceptible. In four cases of aneurism of the ascending aorta, producing a strongly pulsating tumour to the right of the sternum, this and the heart, when the fore-fingers were placed upon both, were felt, and by all seen, to pulsate quite synchronously. When the obstruction is at the mouth of the *aorta* or *pulmonary artery*, I have always noticed the preternatural sound to be *synchronous* with the pulse;—when at an *auriculo-ventricular* opening, in the *intervals* of the pulse,—*after* or *before* the pulse. Sometimes in the latter case, it is so prolonged, as to last till the pulse is again felt; so that there is no interval; but merely an equal alternation of the ventricular, and the preternatural auricular sound: or even an interval occurs after the ventricular stroke;—probably from the auricle not being disposed for contraction at the usual time; on account of its contraction having been so lengthened by the difficult escape of its blood, that a longer repose is required, than just during the ventricular contraction. Hear the *auricular* sound occurs first; then the *ventricular*; and then the *interval*.

Thirdly,—the sounds considered by Laennec to be auricular and ventricular, are heard loudest (both in health and when morbid) at the seat of the auricles and ventricles respectively.—*Recent Improvements, &c. Pages* 15 *and* 16.

No. IX.

ANEURISM OF THE HEART.

Dilatation of the heart is sometimes partial. Dr. Bertin says, that he has frequently found a cavity dilated in one point; while in every other it preserved its natural state, or was even narrowed or hypertrophied. "The right ventricle, for example," he adds, "is often considerably dilated near the pulmonary artery; while the rest of the chamber preserves its ordinary dimensions." I have not yet met with this. But an example is now before me, of partial aneurism of the heart;—of aneurism such as occurs in *arteries*, and therefore necessarily partial. Corvisart found, upon the superior and lateral part of the heart of a young negro who had died in a state of asphyxia, a tumour nearly as large as the heart itself. Its interior contained several dense layers of coagula,—perfectly similar to those which fill the cavities of *arterial* aneurisms; and communicated with the cavity of the ventricle by a narrow opening, the margin of which was smooth and polished. The German anatomist, Walter the elder, had previously described a case of this kind. Drs. Baillie, Zannini, James Johnson, Cruveilhier, Rostan, and Breschet, each mention one. Dr. Beard mentions two; and Talma's heart proved to be in this state. Two aneurisms are mentioned by Dr. Reynaud as occurring in the same heart. There are two specimens in the Museum of St. Thomas's Hospital.

In one, the aneurism is nearly as large as the heart; and in the other, the aneurism is pyramidal, and projects into the left auricle. One lately occurred at St. George's Hospital; and, like one of those at St. Thomas's, projected into the left auricle. Two are mentioned by Mr. Adams; one of which was, like the other at St. Thomas's, nearly as large as the heart itself. In all these cases, the aneurism existed in the left ventricle: in some at the *apex*; in others (almost equally numerous) at the *base*,—as in the case before me, in which there are *two* aneurisms; in others, *between* the base and the apex; in Corvisart's at the *side*; and, in others, at the *front*.

Aneurism is a disease of *arteries*,—never of *veins*; and it is remarkable that the disease was never detected but in the left,—the *arterial* side of the heart; and, indeed, never but in the left *ventricle*, with which the general arterial system is directly continuous. This circumstance accords both with the general observation of the greater frequency of all diseases on the *left* than on the *right* side of the heart, and in the *ventricle* than in the *auricle*; and with the other part of this individual disease (aneurism) being an *arterial* disease; or rather, I should say, a disease of parts containing decarbonized blood; for the pulmonary artery, which contains *black* blood, has not (I believe) yet been seen to be the seat of aneurism. far as appears known, all the instances, except one, have occurred in adult *males*; and *arterial* aneurism occurs eight times more frequently in *males* than in *females*.

This cardiac affection is the first of those in which auscultation renders no assistance. The *general* symptoms which may occur, may well therefore be supposed, by those who know the value of auscultation, to leave the nature of the disease in doubt. Dr. Baillie says the symptoms "are similar to those which belong to aneurism of the arch of the aorta." And what does Dr. Baillie enumerate as the symptoms of aneurism of the arch of the aorta? First, difficulty of breathing. But that may arise from a thousand causes in the heart, lungs, or other parts; and has been absent in aneurism of the heart. Secondly, more or less pain in the aneurismal tumour, or some other part of the chest. But here there is no tumour; and pain in some other part of the chest would certainly never lead us to a knowledge of the disease, but rather to a misconception of its seat and nature. The pulse, he says, is sometimes irregular; but immediately subjoins, that "often no irregularity can be felt in it." The chief symptoms he pronounces to be "a strong pulsation in the chest, commonly visible to the eye, when the chest is exposed to view;" but again immediately subjoins, that he has felt the same kind of pulsation in other cases;—for example, in adhesion of the pericardium, in slight pericarditis with slight hydro-pericardium, and in ordinary morbid enlargement of the heart. Indeed no strong pulsation, except palpitation of the heart, and in most cases not even that, has occurred in this affection. The most decided characteristic of aneurism of the aorta, however,—belonging only to aneurism,—he regards as a strongly-pulsating external tumour, when the aneurism has attained a large size. But aneurism of the *heart* rarely attains a large size; and I do not know that it ever produced an external tumour. And after all, a diagnosis would be required between aneurism of the *heart*, and aneurism of the *arch of the aorta*. It therefore really appears to me,—and I say it with all the respect due to an amiable and industrious man,—that Dr. Baillie would have done better in saying that there were *no* particular symptoms of the disease; — especially as he never met with more than one example of it. In Talma, who died of a strangely-neglected stricture of the rectum, no symptoms had led to a suspicion of cardiac disease. In a patient of Dr. Johnson's,—General Kidd,—death took place suddenly from rupture of the aneurism, without any previous symptom of its existence. The same happened in Dr. Reynaud's case. In a patient of Cruveilhier's, severe asthmatic paroxysms took place; with a sense of constriction, particularly about the heart; and with a peculiar sensation in the arm-pits. These symptoms, together with hardness, fulness, and occasional intermittence, of the pulse, and suffusion of the face, led to the suspicion of organic disease of the heart. But auscultation, at that time, was not yet cultivated. The hardness and fulness of the pulse arose from hypertrophy of the left ventricle.

In the case which supplied the preparation before me, the patient (a man aged

thirty-two, was admitted into St. Thomas's Hospital, March 2, 1826, on account of palpitation of the heart, especially on moving or lying down; inability to lie in any other position than on his back; sudden starting up during sleep; constant dyspnœa and cough, with a little mucous expectoration. The pulse was regular, not much quicker than natural, but exceedingly weak. He had discharged large quantities of tape-worm, by means of oil of turpentine; and suffered severely from rheumatism the preceding winter, and was still complaining of it. These symptoms gave no information as to the nature of the disease. They only led to a suspicion of some affection of the heart. I was not, at that time, well-practised in auscultation; but found the ventricular impulse of the heart very strong all over the right half of the cardiac region; and therefore concluded that the disease existed in the right ventricle. In two months, he became much better under rest, and moderate antiphlogistic treatment; experienced less palpitation and dyspnœa; could lie on both sides; and was stronger. The ventricular action was no longer strong on the *right* side; but was now both loud and strong in the lower part of the *left*. I could thus form an opinion, as to the seat and nature of the disease. The dyspnœa, after this time, gradually increased for a fortnight; and he then died. On opening the body, two aneurisms were found at the upper part of the *left* ventricle; but on the *right* ventricle, was a tumour or large tubercle, the size of a pigeon's egg, with several smaller ones. The force originally observed in the *right* half of the cardiac region, was now explicable; although the aneurisms sprang from the *left* ventricle. The aneurisms, when I first saw him, were probably not large enough to occasion symptoms so considerable as the tumour on the *right* ventricle; but as they increased, decided symptoms necessarily arose in the *left* half of the cardiac region;—much exceeding those produced in the *right* by the tumour.

I have very lately met with a case of aneurism of an *auricle;*—a part which has never, I believe, been recorded to have laboured under that disease. There was hypertrophy and dilatation of the left ventricle, with extreme ossification and cohesion of the mitral valve;—the auriculo—ventricular opening being proportionably reduced, the sinus of the left auricle formed an aneurism of large size, with very dense and thick layers of fibrin for its walls; and these had reduced its cavity to a very small capacity. The action of the ventricles had been strong, loud, and extended; and a dull sound had been given, more extensively than natural, on percussion of the cardiac region. The hypertrophy and dilatation of these parts, were pronounced during life. The pulse had been feeble, and the breathing very difficult; and the legs had swelled. The feebleness of the pulse, notwithstanding the strong action of the left ventricle, arose from the small quantity of blood discharged into the left ventricle to be propelled into the aorta; but had not been ascribed to this cause, as there was no *bellows-sound,* or *thrill.* Neither the aneurism, nor the constriction of the left auriculo-ventricular opening, had been suspected. The absence of a bellows-sound arose from the circumstance that the opening, though constricted, was still perfectly commensurate with the reduced capacity of the auricle;—retaining its natural proportion to the auricle; and affording a sufficient outlet to the small quantity of blood that was to be discharged. The fact is as interesting as the situation of the aneurism is extraordinary.

The case proves, for the first time, that cardiac aneurism is not peculiar to the left ventricle, nor even to the ventricles. I may remark, that my case of *ventricular* aneurism affords an argument additional to those already on record, and adduced by Dr. Reynaud, of the error of Breschet in supposing it to be generally situated towards the *apex* of the ventricle. The two aneurisms, in this case, were lined by a smooth membrane, continuous with that of the ventricles; and thus afforded also an additional proof that, in these cases, the internal membrane is not necessarily injured,—as Breschet must also imagine, when he calls them "*false* consecutive aneurisms;" though it must be allowed, that he did not consider the ten cases with which he was acquainted, sufficient to afford a perfect history of the disease. *Dr. Elliotson, on Diseases of the Heart; Pages* 28—30.

No. X.

DEATH OF GEORGE THE SECOND.

SMOLLET, in his "History of England" (Volume V. Page 418), makes two egregious blunders in his account of the King's death. "On the twenty fifth day of October, 1760," he says, "George, King of Great Britain, *without any previous disorder*, was (in the morning early) seized with the agony of death, at the palace of Kensington. He had risen at his usual hour, drunk his chocolate, and inquired about the wind,—as anxious for the arrival of the foreign mails. Then he opened a window of his apartment; and, perceiving that the weather was serene, declared he would walk in the garden. In a few minutes after this declaration, while he remained alone in his chamber, he fell down upon the floor. The noise of his fall brought into the room his attendants, who lifted him on the bed; when he desired, in a faint voice, that the Princess Amelia might be called; but before she could reach the apartment, he had expired! An attempt was made to bleed him; but without effect; and indeed his malady was far beyond the reach of art; for when the cavity of the thorax was opened, and inspected by the serjeant-surgeons, they found the right ventricle of the heart actually ruptured, and a great quantity of blood discharged into the pericardium; so that he must have died instantaneously, in consequence of this effusion. The case, however, was so extraordinary, that *we question whether there is such another instance upon record.* A rupture of this nature appears the more remarkable, as it happened to a prince of healthy constitution, unaddicted to excess, and advanced far beyond that period of life, when the blood might be supposed to flow with a dangerous impetuosity."

Now we have seen that a member of the very same family,—the Princess of Brunswick, died not only of a rupture of the *heart*, but of a rupture of the very *same ventricle* of the heart, in 1730; and Dr. Smollet's reflections on the improbability of rupture from the moderate impulse of the blood in the King, are groundless; as ruptures of the heart and aorta rarely occur, under the most *violent* impulse, unless there be disease of substance; and when the latter exists, rupture may occur under the most feeble impulse of the blood. Rupture of the blood-vessels of the head, is most common in the aged; as the coats of those vessels are most frequently diseased in the decline of life.

So far is it from being correct that his Majesty had experienced no particular disorder, that Dr. Nicholls, the King's physician, in his account of the dissection, in the "Philosophical Transactions" for 1762, informs us that "His Majesty had, for many years, complained of frequent distresses and sinkings about the region of the heart; and his pulse, of late years, was observed to fall very much upon bleeding." As if errors were predestined on this point, Dr. Forbes, in his translation of Laennec, states that "George the Second, of England, is often said to have fallen a victim to the same accident as Philip the Fifth, of Spain;—a rupture of the *heart*; but his death was occasioned by rupture of the *aorta*." The words of Dr. Nicholls, however, are the following:—"The pericardium was found distended with a quantity of coagulated blood, nearly sufficient to fill a pint-cup; and upon removing this blood, a round orifice appeared in the middle of the upper side of the *right ventricle of the heart*,—large enough to admit the extremity of the little finger. The ventricles were found absolutely devoid of blood, either in a fluid or coagulated state." Aneurism of the aorta *existed*, but was not *ruptured*. The middle and interior coats were split; but the external was entire,—as in the first stage of false aneurism; and merely an elevation was produced.

It is amusing, at this time, to read Junius's calculation on an hereditary tendency; and his hinting in 1770 to George the Third, who died in 1820, the possibility of a long minority; as "every true friend of the House of Brunswick sees, with affliction, how rapidly some of the principal branches of the family had dropped off."— (Letter XXXVII. To the Printer of the Public Advertiser.)

In George the Second, the internal and middle coats of the aorta presented a transverse fissure; around which was a coagulum under the external coat, which would soon likewise have burst, perhaps longitudinally,—exactly as in the case of my patient at St. Thomas's Hospital; and had no rupture of the right ventricle occurred, as above described, sudden death would ultimately have taken place, from rupture of the aorta.—*Dr. Elliotson, on Diseases of the Heart; Pages* 31 *and* 34.

No. XI.

CONGESTION OF THE LUNGS.

J. G., aged thirty-five years, by business a gardener, a mild and extremely steady man, laboured for two years under dyspnœa, pyrexia, cough, pain of the chest, bloody expectoration, and at length profuse hæmoptysis. Sulphuric acid with sulphate of magnesia, sub-carbonate of lead with opium, and blisters innumerable were prescribed in vain. The hæmoptysis recurred, with increased frequency and violence; and he was ultimately exhausted. Four days previously to his death, icterus began in his face and neck; and at the period of his dissolution, it was deep and considerable. The right hypochondrium, too, had become tender; and the lower extremities were œdematous.

On opening the body, the surface of the lungs presented numerous hard, circumscribed, very dark patches of various sizes;—from that of a sixpence, to the size of a crown. A person not of the profession would have supposed them to be so many mortifications. Blood, however, when abundantly accumulated in the small vessels, often causes a counterfeit appearance of mortification in the stomach and intestines, (as Dr. Baillie has pointed out), and in many other parts. Such was the nature of these patches. On cutting perpendicularly through them, the hardness and dark colour were found extending inwardly, an inch or less,—equally circumscribed as on the surface.

The intervening spaces were perfectly healthy. Nearly the whole of the inferior lobe, on the right side, had undergone the same change as the circumscribed portions in the other lobes. This change consisted in a prodigious congestion of blood, which gave the dark colour and hardness; but which could not be squeezed out. The slices were quite diaphanous, and of a beautiful red colour. No other change,—no disorganization was in any part discernible. It seemed as if the most minute vessels, in various parts, had become dilated, as in nævi materni; and had thus allowed the escape of the blood. Had the symptoms been those of acute inflammation, and had the blackness not been in detached portions, there would have been nothing singular in the case; and had the disease been simply chronic inflammation,—which is argued by a frequent pain at the anterior and lower part of the chest, always yielding to blisters, and a large quantity of bloody fluid in both pleuræ after death,—yet it is surprising that this should have occured in patches, and should have induced no suppuration or disorganization, but merely hæmoptysis and pain.—*Dr. Elliotson, in the "Annals of Medicine and Surgery" for* 1816.

This state of the lungs has been termed by Laennec, and I must think very absurdly, *pulmonary apoplexy*. Dr. Forbes mentions that Dr. Leveillé read a memoir on the subject to the Academy of Sciences at Paris, in 1816; and that Dr. Hohnbaum, of Hildburghausen, published (at Erlangen, in 1817) three cases of sudden and fatal effusion into the substance of the lungs. The lungs were distended with dark-coloured blood,—partly fluid and partly solid; and were almost too large for the chest. In one case blood was also in the bronchia; and in another in the pleuræ. These cases appear to have been nothing more than a laceration of blood-vessels in the very substance of the lungs; and the patients

died from the combined effects of internal hœmorrhage and oppression of the lungs,—of syncope and asphyxia. Corvisart had formerly described such a case, in his translation of Avenbrugger. From the suddenness of the event, and the congested and lacerated state of the parts, Dr. Hohnbaum had given the name of "pulmonary apoplexy" (Lungenshchlagfluss) to these cases. But neither sudden death on the one hand, nor congestion and effusion of blood on the other, constitute apoplexy. In apoplexy, respiration and the action of the heart may continue; but relation and sensation have ceased, totally or partially, in the brain.—*Dr. Elliotson, on Diseases of the Heart; Pages 32 and 33.*

No. XII.

MORBID SOUNDS OF THE HEART.

The lining membrane of the heart's cavities and valves, on one or both sides, is occasionally found intensely red;—that of the aorta, or pulmonary artery, or both, generally shewing the same appearance; and the redness, which is of necessity most striking in the valves, cannot be washed away without maceration for some hours; or even days. It cannot always be ascribed to the imbibition of blood; because, frequently, no blood is found in contact with the reddened part; and the artificial application of blood to the interior of an artery, during forty-eight hours, has failed to redden it to the same degree. I have seen the heart and aorta quite empty where this redness existed. Neither can it be ascribed to congestion from dyspnæa; for I have seen it where death had taken place in a moment, in the midst of perfect general health; nor to decomposition;—for I have witnessed it on the day following death in cold weather. I have seen it intense, even when all these conditions were united;—fixedness of colour, freedom from the contact of blood, sudden death, perfect general health, and absence of decomposition. Of course, mechanical obstruction to the passage of the blood from the vascular system of the heart, or a softened state of the organ, either from disease or from incipient decomposition, will cause the blood in the substance or the cavites of the heart to redden the lining membrane deeply.

I am not aware of any cardiac symptoms to which inflammation here would give rise, except rapidity of pulse; increased force and sound of the heart's action,—exactly as occurs in pericarditis; and,—when the portion covering the valves and their immediate vicinity, is not only inflamed, but thickened, covered or bound down by an effusion of fibrin, or constricted,—those preternatural sounds which the narrowing of a cardiac orifice, or of a large artery produce;—denominated the "*bellows*-sound," and the "*file*-sound." Andral has seen the membrane thickened, and easily peel off in large portions; and Baillie, Bertin, and others, have found fibrin lying upon it after acute inflammation. If one of the above-mentioned sounds be not produced, I presume acute inflammation of the lining membrane of the heart, can be distinguished from pericarditis only by the absence of pain in the particular directions pointed out when treating of the latter disease, and of tenderness on pressure applied in the manner which I then pointed out.

Acute inflammation of the lining membrane of the heart, now and then occurs alone; but far more frequently in those who have already some chronic disease of the heart; or it accompanies acute pericarditis. I have never opened a person who died with this acute affection; but four times I have suspected its existence, when acute pericarditis was present. The only ground of my suspicions was the occurrence, in these cases, of a sound like that of a bellows, accompanying the contraction of the heart;—a symptom which the most assiduous French auscultators (Laennec, Bertin, Andral, Collin) do not consider as belonging to pericarditis; and which my experience, and that of all my friends accustomed, like myself, to employ the stethoscope in every case of pectoral disease, shews to be no symptom of mere pericarditis. Indeed, there is an impossibility in imagining how it should

be; for we hear it every day (where no pericarditis exists) from any mechanical disturbance to the course of the blood, in any point of its progress through the heart, or even through the arteries. In two of these four cases of acute pericarditis in which I heard it, the symptoms of pericarditis were very mild; yet the sound was considerable, and it ceased after antiphlogistic measures had been employed. On the other hand, I have attended numerous violent and well-marked cases of acute pericarditis, and have not heard it; though in none did I ever omit daily to employ the stethoscope; and, as well as some of my friends, have made this a point of careful investigation. In the two other cases, the symptoms of pericarditis were certainly violent; but, after they were entirely subdued, the bellows-sound continued as loud as before;—evidently resulting, therefore, not from the presence of pericarditis, but from those organic changes that every day give rise to the bellows-sound, and are often preceded by pericarditis. For the same reason, I have known it not begin, till all the symptoms of the pericarditis had actually subsided.

In acuto-chronic, and chronic pericarditis, this sound is not uncommon; and, when once it has begun, it may subside for some weeks, or may continue till death;—lasting, perhaps, for years. It depends, not upon the pericarditis, (for this may at length cease, and possibly the whole membrane cohere), but almost always upon chronic disease of the lining membrane about the valves and openings; or upon some induration and enlargement external to the openings or passages from the heart, and compressing them; or upon dilation of a cavity behind an opening. I have never opened a person whom I had seen labouring under chronic pericarditis, and affording the bellows-sound *constantly*, in whom a diseased condition of an opening or passage from the heart did not present itself;—in whom the opening or passage was not below its natural proportion to the cavity behind it;—being itself lessened or compressed; or the cavity behind it increased, so that the opening was become virtually too small. The occasional occurrence of acute inflammation of the lining membrane or substance of the heart, simultaneously with *acute* inflammation of the pericardium,—effusing lymph about the openings, inducing spasmodic constriction of them, or turgescence around them; and the tendency of the lining membrane and the substance of the heart to become diseased, and the morbid depositions to take place externally to the roots of the two great arteries, when the pericardium is the seat of *chronic* inflammation;—these are the reasons, I am satisfied, why the bellows-sound is ever heard in conjunction with the symptoms of pericarditis.

I have never (except in one, and that a most extraordinary case) seen the opening leading from an auricle or ventricle materially narrowed, without having heard a preternatural sound at the moment of the contraction of the auricle or ventricle behind it. The sound is sometimes protracted; and sometimes, while one portion of it resembles the blowing of a bellows, I have heard another resemble the filing of wood, or the action of a fine saw; though this compound sound is not mentioned by authors. Once, where the pulsations of the heart varied in force, the sound which occurred at the auricular contraction, and in the right side of the heart, was loud, rough, and sawing, at the strong pulsations; and small and shrill at the weaker. In another case, in which the force of the pulse varied, the bellows-sound (ventricular, and at the right side of the cardiac region) was perceptible at the strong pulsations only. In both cases, immediately after the preternatural sounds, a faint sucking or aspiring sound was heard. In one case, apparently of constriction of the opening of the mitral valve, the sound was small and shrill (*bruit de rape*) at the centre of the sternum, but full and bass at the cartilages to the left; and of the same nature, though fainter, all over the left half of the back. Sometimes it altogether resembles the sound of a file or a saw; and at times I have heard it exactly resembling the cooing of a dove;—a variety not mentioned, I believe, by authors. In one case it was so loud, that I heard it when standing nearly a foot from the patient. Three times have I heard this cooing sound.

Just as is observed with respect to the tissues of all other cavities, and of all canals, the portions of the lining membrane about the *boundaries* of the cardiac cavities, are the spots most likely to be affected. Scirrhus and stricture of the alimentary canal affect, chiefly the cardia, pylorus, and rectum; and the termi-

nation of the ileum is the most frequent seat of intestinal ulceration in fever. Ulceration of the air-tubes originates, most frequently, in the larynx and the air-cells. The lips are continually affected with cancer; and the neck and mouth of the bladder and womb, are commonly the original seat of the organic diseases of those organs. In the same way inflammatory thickening, and all other diseases of the lining membrane of the heart, by far most frequently occupy that portion which invests the *openings*, and assists to form the *valves*; and if it affect the rest also, it is in a much slighter manner; although, occasionally, the rest of the membrane is equally thickened; and I have seen the valves and openings free from disease, while the rest was so thickened that, on cutting the ventricles through, the red incised surface presented a thick white inner edge. When the pericarditis has been intense and general, the inner membrane has also, in many instances, suffered so much, that two sets of valves, and even three, are seriously altered. I have seen the base or zone only of the valves thickened and contracted; so that a real stricture impeded the progress of the blood into the artery.

In the natural state the valves are translucent, fine, and flexible. When the subject of chronic inflammation, they become opaque and yellowish, thick and rigid. These changes are seen in dead subjects, in various degrees; and may be considerable, without reaching such a point as sensibly to disturb function. Their progress also takes place with various degrees of celerity. The surface of the valves may retain its smoothness; though frequently we observe asperities from excrescence or deposition. The induration varies in different points; so that one portion is partly translucent, while the other is not only opaque and rigid, but even horny. The induration at length amounts to cartilage; and the part creaks when cut. The last stage is complete ossification.

As the thickening and induration proceed, the opening becomes narrow;—both from the thickening of the edges, and from the approach of the portions of the valves towards each other. The several portions of the tricuspid and bicuspid valves, grow up completely into a membrane, with an aperture in its centre; and this aperture is sometimes, as seen from the ventricle, and *generally* when viewed from the *auricle*, not circular, but longitudinal;—a mere slit usually (Mr. Adams remarks) of a crescent form; with the concavity towards the root of the aorta, and the convexity backwards; and the extension of the valvular membrane is sometimes so considerable, that it appears to project into the ventricle, in the form of a pouch or funnel. The semilunar valves of the pulmonary artery, stand firm and convex; as if distended by repletion of their sacs; and grow up, so as to leave only a small round or triangular opening in their middle. Sometimes, according to Bertin and Laennec, the margin of the aortic valves is folded in, and sometimes folded *back*. Sometimes only one set of valves is affected; but more frequently, if one set is severely affected, another set is at least opaque, and thickened to a certain degree. When the impediment to the progress of the blood is considerable, the auricle behind is usually dilated; and is sometimes attenuated, sometimes of its natural thickness, and sometimes (though rarely) thickened. Whether it be an *auriculo-ventricular* opening, or a ventriculo-arterial, the effect is the same. Occasionally, when a ventriculo-arterial opening is narrowed, the ventricle behind is dilated, or thickened, or both; but frequently this is not the case. The auricles suffer from being muscular only to a certain extent, and being throughout of insignificant extent, compared with the ventricles.

Mere thickening, and all other diseases, are seen much more frequently in the *left*, than in the *right* half of the heart; for which circumstance no other reason can be given, than that assigned by M. Bertin; namely, that the left is stimulated by *arterial* blood, and the right only by *venous*. The difference between arterial and venous blood, as agents or living parts, is demonstrated by the experiment of injecting venous blood into the carotids; when stupor and death ensue. If irritation occur in the heart, it is more likely to be maintained and pushed on to serious disease in the *left* side, by the stimulating arterial blood from the lungs, than by the inert venous blood returned to the *right* side, after having served its purposes in the body. The difference cannot be attributed to degree of function; for the right side performs as much function as the left;—nor to obstruction to the course

of the blood; for obstructions happen oftener on the *right* side, owing to the frequency of pulmonic affections.

When the preternatural sounds are not very intense, the ear must be brought into contact with the chest, or some solid medium employed; but when intense, they may be heard at a little distance. Some have conjectured, that when the narrowed opening exists in a valve which has become of no more than *cartilaginous* hardness, the *bellows*-sound is heard; and when of *osseous*, the *file*-sound. I believe that degree of obstruction is the great cause of varieties of sound; but the diversity I have noticed of the same sound, in listening at different spots, shews the power of distance, or of variety of media to modify it.

From the occasional loudness of the morbid sound, wherever situated, (and I have sometimes heard it, in various degrees of intensity, at every part of the chest), a difficulty sometimes occurs in deciding whether it originates on the left or on the right side. But a very careful examination of both sides of the cardiac region enables us, in general, to say distinctly, that it is loudest on one side; and there we may always presume its source to be. Sometimes, but less frequently, a difficulty exists from the extreme rapidity of the heart's action, as to whether the morbid sound is heard at the ventricular or the auricular contraction;—as to whether the sound is heard at the moment of the arterial pulse or not. But by listening for a length of time, and repeatedly even during only one visit, the difficulty generally vanishes; the confusion which at first prevailed declines; and the coincidence and succession of the phenomena become evident;—exactly as happens when, on first surveying a large collection of visible objects, all are confused; but at length every object is perceived distinctly; or as when a person listens, for the first time, to the healthy sounds of the lungs or heart, and finds all confusion; but, by perseverance, gradually distinguishes each with perfect accuracy.

There is sometimes a thrill perceptible on applying the hand upon the heart;—a tremulous motion resembling the purring of a cat. This was stated by Corvisart, and afterwards by Laennec, to distinguish narrowing of the left auriculo-ventricular opening. But the latter, in his second edition, mentions that he had found reason not to think it peculiar to the narrowing of that orifice. It results from the same causes as the preternatural sounds. I believe it occurs more frequently when that orifice is narrowed, than when any other is obstructed.

I believe that when this opening is narrowed, the pulse is generally irregular, both in force and frequency;—a peculiar combination well known to practitioners, in which several beats succeed each other in rapid succession, and with tolerable force; while others, again, occur slowly, and with little force;—perhaps so weakly, that they can scarcely be perceived, or not at all; although, at the heart, the pulsation is evident enough. This most irregular pulse is thought, by Mr. Adams, to be pathognomonic of narrowing of the left auriculo-ventricular opening. Corvisart thought extreme irregularity of the pulse, both in force and frequency, to characterize aneurism of the *aortic* opening. I do not happen to recollect a pulse irregular in force and frequency, in a single case of narrowing of the aortic opening solely; while I know that it is very common in narrowing of the left auriculo-ventricular opening;—though possibly not *peculiar* to it, or indeed to narrowing of *any* opening. Mr. Hodgson also mentions that, in narrowing of the left auriculo-ventricular opening, there is often a double pulsation of the heart; that is, two beats of the heart, to one at the wrist;—a pulsation of the heart from the action of the *ventricle*, and another from the action of the *auricle*. He appears to attempt to explain the fact; but this able surgeon expresses himself in rather an obscure manner. "The auricle," he says, "first acts, and propels its contents into the ventricle; but, from the contraction of the communication, the blood is not, as in the natural state, poured at once into that cavity. The ventricle, though imperfectly filled, contracts; and forces the blood into the aorta. Thus there is a pulse caused by the action of the *auricle*, and another by that of the *ventricle*; so that for every pulsation at the wrist, two pulsations are perceptible at the heart." This does not appear to me a satisfactory explanation. The truth is that, in health, there is a double action of the heart perceptible to the ear;—one action of the *auricles*, and another of the *ventricles*; though this was not generally noticed at the time Mr.

Hodgson wrote. When the left auriculo-ventricular opening is narrowed, so that the blood can only be squirted into the ventricle, the auricular action is sometimes very distinct to the hand, in the condition of a thrill or purring; which is what Mr. Hodgson had remarked, and called (to use his own words), — "an irregular thrill, or *bruissement*, as Corvisart terms it; rather than a distinct pulsation." Sometimes it is a distinct shock; and, in another sentence, Mr. Hodgson speaks of it as such; saying,—"Thus there is a pulse caused by the action of the auricles, and another by that of the ventricles;"—"nor is the auricular pulse trifling." This happens only, I believe, when the walls of an auricle are increased in substance,—are in a state of hypertrophy; so that they act with a force approaching to that of the ventricles, and a double stroke of the heart may be felt by the hand. That this, and not the imperfect repletion of the left ventricle, by which it acts twice, is the reason of the double stroke, appears to me shewn by the fact that, when it has been observed, the auricle or auricles have always been hypertrophied, and in some cases the auriculo-ventricular opening has not at all been narrowed; and, secondly, that it is not observed, however narrow the auriculo-ventricular opening may be, if the auricle is not hypertrophied;—and, indeed, this hypertrophy is rare; as the obstruction usually produces dilatation and thinning.

Corvisart remarks, that obstruction at either aperture on the *left* side, causes more irregularity than obstruction on the *right*. Even the thrill is frequently absent, when the narrowing is considerable; and I am ignorant upon what exact conditions it depends;—whether upon the degree of the narrowing, or on the shape of the diseased opening, or what.

A third peculiarity has been remarked in the narrowing of the left auriculo-ventricular opening; namely, smallness of the pulse; and a good example of this is given by Mr. Abernethy, in the first volume of the "Medico-Chirurgical Transactions;" and by Mr. Adams, in the fourth volume of the "Dublin Hospital Reports." The small quantity of blood poured into the left ventricle, at each auricular contraction, is insufficient to enable the ventricle to project a due portion into the arteries;—whence the smallness of the pulse. But the same smallness of pulse results from a narrowing of the aortic opening; and nothing but the observation whether the preternatural sound which may exist, occurs at the *auricular* or at the *ventricular* action, can determine whether the narrowing is at the auriculo-ventricular, or at the ventriculo-aortic opening. It may also result from a general diminution of the cavity of the left ventricle, accompanied by *no* narrowness of opening; for this must obviously occasion a small projection of blood into the arteries, equally with a diminution of aperture. The importance of this symptom alone, therefore, is absolutely nothing. It does not necessarily indicate narrowing of the openings in the left side of the heart. If, indeed, the preternatural sound be heard at the ventricular contraction, this smallness of pulse may assist in leading to the idea that the narrowing is on the left side of the heart; but the greater loudness of the sound on the left side, will sufficiently declare it. The inferiority of this symptom in the pulse, to the observation of the preternatural sound, is shewn by the preternatural sound occurring long before the pulse grows small. I have often noticed no smallness of pulse up to the time of death; when an auricular or ventricular preternatural sound, loudest at the left half of the cardiac region, shewed the left auriculo-ventricular, or ventriculo-aortic opening, to be diminished; and, after death, this state of things was discovered. When the narrowness is at the mouth of the aorta, the action of the left ventricle, notwithstanding that the pulse is small, is sometimes very strong,—owing to its walls being hypertrophied.

Interesting as is the presence or absence of these symptoms of the thrill, the irregularity of the pulse in force and pregnancy, and the smallness of the pulse;—which are chiefly relied upon, in general, to determine the existence and seat of a narrowing of a cardiac opening; and useful as they are, in many cases, to assist the diagnosis, they are all far inferior to the observation of the existence, or non-existence, and of the seat of the preternatural sound. Yet they should be looked for, and investigated in every case; for they may confirm the inferences drawn from the morbid sounds; and cases may happen, in which the observation of these may be necessary to deducing the source of the sound.—*Elliotson, on Diseases of the Heart; Pages* 13—17.

No. XIII.

MALIGNANT CHOLERA AT EDINBURGH.

CASE I.

Janet Campbell, aged 58. After having been in attendance on a woman who died of cholera, and sitting up with the body through the night,—during the whole of which time she was in a state of intoxication,—she was seized, at nine o'clock in the morning, with the usual symptoms of cholera, in a violent form. At two o'clock, a vein was opened in the arm; but blood could not be obtained in a stream; and only six ounces were abstracted. A sinapism was applied to the spine; and two ounces of whiskey-toddy were given. Three hours afterwards, she was brought into the hospital, and placed under the care of Dr. Mackintosh. She was placed on the steam-bed, and ordered to have warm wine-and-water occasionally; and to have the legs and arms well rubbed with a stimulating embrocation. She had no vomiting or purging for some hours after admission, nor was any urine passed; but she was very restless; and complained of great pain in the back. Occasionally she attempted to raise herself suddenly in bed. The pulse, which could not be felt on her admission, afterwards became perceptible; but was small, weak, and very compressible. The other symptoms were also alleviated, under the frequent use of turpentine-enemata, occasional sinapisms, and a powder of rhubarb and calomel every hour; but soon after midnight she began to sink. The restlessness increased; she turned incessantly from side to side; and looked wildly around. The lower extremities were quite warm; while the upper were cold, and very blue. There were constant retchings; quick and laborious respiration; and, at intervals, a convulsive shutting of the lower jaw. She died at half past two in the morning.

On inspection, twelve hours after death, the meningeal arteries, the veins of the pia mater, and the arteries at the base of the brain, were found much distended with dark-coloured, fluid blood. There was very considerable serous effusion between the arachnoid membrane and the pia mater; but there was very little in the ventricles. This was probably owing to the spine having been previously opened; —thus allowing an exit for the serum, which, when the ventricles were opened first, they were always found to contain. Arborescent vascularity was found on the surface of the cerebral convolutions. There was considerable effusion of serum in the spinal canal. All the vessels ramifying on the membrane of the spine, and on the origins of the nerves, were filled with dark-coloured blood;—an appearance which was most remarkable in the dorsal and lumbar regions. The rachidian veins were much distended with black blood. The peritoneum was minutely injected,—particularly in the neighbourhood of the bladder; and there were numerous red spots on its surface. Two or three ounces of turbid serum, containing flakes of yellowish lymph, were found in the pelvis. The stomach presented, externally, a whitish appearance;—and contained a good deal of white fluid, mixed with flakes. Its mucous membrane was much softened; and presented a large ecchymotic spot on its surface. The small intestines were distended with a greenish semi-fluid matter. The larger intestines were contracted; and could not be distended by insufflation. The bladder was empty and contracted. The liver was of a pale yellow colour; its vessels were injected; and its surface, in several places, presented a puckered appearance. The gall-bladder was large, and distended with green bile; which, by pressure, could be forced into the duodenum. The right kidney was sacculated; but otherwise healthy in structure. There were old adhesions of the pleura; the vessels of which appeared minutely injected. The intercostal

veins were gorged with black blood. The sympathetic nerves and par vagum were healthy. The semilunar ganglion of the left side, was of the same colour as the crus of the diaphragm; that of the right side was red, but paler than its fellow. The vasa vasorum of the aorta and pulmonary artery were much injected. The right auricle and ventricle contained a large fibrinous clot; and the ventricle was softened and flabby. There was a small clot in the left auricle; the left ventricle was contracted and hard; and its parietes were about an inch in thickness. It contained a drachm of black blood. The left auriculo-ventricular opening would scarcely admit the introduction of the little finger. The arteries of the lower extremities were filled with black blood; as were also those of the upper, though not to so great an extent.

CASE II.

February 16, 1832.—Peter Elliott, eight years of age, was admitted into the hospital, under the care of Mr. Meikle, at eight o'clock in the evening. For several days he has laboured under a slight watery diarrhœa; which became much aggravated yesterday evening. The pulse is quick, and the skin hot. He was ordered eight grains of rhubarb; after which he had several dejections, containing what appeared to have formed part of his dinner yesterday. He vomited a little.

February 17.—At half past five this morning, he was ordered the following:—℞ Olei Ricini ʒ v; Spiritus Cinnamomi ℥ss; Aquæ Puræ ℥j; Tincturæ Opii gtt. x. M. Fiat haustus statim sumendus.

7 A. M.—He retained the draught for about an hour; and then vomited a little. Tongue white; great thirst; pulse scarcely to be felt; inferior extremities cold. Has not complained of any particular pain. Ordered to have nitric-acid drink; and to take, every hour, a pill containing calomel.

8 A. M.—Since last report, he was placed on the heated steam-mattrass. The pulse at the wrist was at that time, and still continues, imperceptible. He complains much of thirst; and the tongue is furred at the tip and edges. Countenance sharp; eyes sunk, and surrounded by a dark circle; face and hands rather cold; body moderately warm. ℞ Submuriatis Hydrargyri gr. iv; Pulveris Rhæi. gr. viij. M. Fiat pulvis statim sumendus; et repetendus omni horâ. Applicetur sinapismus epigastrio. The pill to be omitted; the acid drink to be continued; and the extremities to be well rubbed.

9 A. M.—He complains of the sinapism. Has had neither purging nor vomiting. Pulse still imperceptible.

10 A. M.—The sinapism has caused considerable vascularity of the abdomen. At half past nine, the pulse became perceptible; but is weak, compressible, and about a hundred and sixty in a minute. He has had a slight tendency to vomit; but has not ejected anything. Has passed, per anum, about half an ounce of watery fluid; with a very small portion of mucus.

12 A. M.—At eleven o'clock he had a turpentine-injection; which is still retained. Two ounces of blood were taken from the jugular vein. Pulse indistinct and fluttering. Voice less weak than it was. He is drowsy; and has vomited a considerable quantity of yellow fluid. Repetatur sinapismus. Applicetur nuchæ emplastrum lyttæ.

2 P M.—The pulse is still very indistinct. ℞ Hydrargyri Submuriatis gr. iv; Pulveris Jalapæ gr. x. Fiat pulvis statim sumendus, et repetendus omni horâ. ℞ Sulphatis Sodæ ℥ss.; Infusi sennæ,—Aquæ āā. ℥iv. M. ut fiat injectio statim administranda, et repetenda si opus sit.

3 P. M.—Admoveatur sinapismus pedibus.

4 P. M.—Repetatur pulvis purgans. To have a little mulled wine occasionally.

6 P. M.—Has had two thin watery stools. Repetantur enema et pulvis purgans.

7 P. M.—The sinapisms have been removed, in consequence of their causing great uneasiness. The inferior extremities are quite cold; and the pulse is not perceptible. Ordered to have a little brandy and water; the legs to be well rubbed with warm cloths; and the mattress to be well heated.

8 P. M.—Since the last report he has been sinking rapidly;—the pulse remaining imperceptible, and the surface becoming quite cold. Half an hour ago he was

ordered the following:—℞ Spiritus Etheris Nitrosi ʒj; Aquæ Ammoniæ gtt. x; Misturæ Camphoræ ℥j. Fiat haustus statim sumendus. Sinapisms to be applied to the epigastrium and the feet; and the legs to be well rubbed with warm flannel. The breathing is increasingly laborious; and is performed only by the diaphragm. Boiling water poured on the extremities produces no sensation.

The patient died a quarter of an hour after the last report. This is one of the few cases in which no examination after death was allowed.

No. XIV.

ACUPUNCTURE.

The most obvious purpose of this operation, is to allow the escape through the skin of the fluid of œdema or anasarca; or of the blood, when superficially accumulated; but,—from an idea that various disorders arise from a kind of subtle and acrid vapour pent up,—it has been had recourse to by the Chinese, for the purpose of giving vent to this vapour, from time immemorial. From China, the practice spread to Japan; where, for ages, it has been very common. In 1679, Ten Rhyne, a medical officer in the East India Company's service, gave the first information to Europe, of a practice unknown to the Greeks, Romans, or Arabians. He states, that a guard of the Emperor of Japan, appointed to conduct the English to the palace, was seized with vomiting and violent pain of the abdomen, after drinking a quantity of iced water when heated. He took wine and ginger in vain; and then, persuaded that he had wind, had recourse to acupuncture, in the presence of Ten Rhyne. It appears that the Japanese are liable to a violent kind of colic, called *senki*; which they regard as too severe to arise from morbid matter in the cavity of the intestines; and ascribe to something morbid in the parietes of the abdomen, in the omentum, in the mesentery, or in the substance of the intestines; and converted, by its stay in these parts, into a vapour; the escape of which from its narrow prison, by means of acupuncture, is immediately followed by a cessation of the pain and distention. The guard laid himself upon his back; placed the point of a needle upon his abdomen; struck its head with a hammer once or twice to make it pass through the skin; rotatated it between his thumb and fore-finger, till it entered to the depth of an inch; and then, after thirty respirations (as it would appear), withdrew it, and pressed the punctures with his fingers, to force out the imaginary vapour. He made four such punctures, and was instantly relieved and got well.

The needles in Japan, are always made of the purest gold and silver,—preferably of gold, and well-tempered. Their manufacture is a distinct occupation, understood by few; and those few are licensed by the emperor. Some are fine, about four inches in length, and provided with a spiral handle, for the purpose of rotating them more easily. They are kept (by means of a ring, or a piece of silk thread) in grooves on either side of a hammer; each groove being capable of holding one. The hammer is usually made of the polished horn of the wild ox, of ivory, of ebony, or of some other hard wood. It is rather longer than the needle, and has a roundish head; covered, on the side which strikes, with a piece of leather; and rendered heavier by a little lead within. Others are of silver only, still finer at the point, with a short thick handle, bent down upon itself; and are kept, several together, in a varnished wooden box, lined with cloth. These are not struck with a hammer; but a fine copper canula, about an inch shorter than the needle, is sometimes employed to steady the latter, and prevent its entering too far.

The selection of the part of it for the operation, or for the application of the moxa,—the other great remedy of the Japanese,—is usually confided to particular persons called "Tensasi,"—*touchers*, or *searchers* of the parts; while those who

apply the needles are styled " Farittate,—"*needle-prickers;* though, occasionally, the common people trust to their own experience; only taking care not to prick any nerve, tendon, or considerable blood-vessel. The seat of the cause of the symptoms, is the proper part for the operation; and delineations of the body are sold, conveying this information. If the patient do not bear the needle well, it is at once withdrawn; but if he do, and the disease prove obstinate, it is introduced two, three, four, five, or six times. The more severe the affection, and the stouter the patient, the deeper must be the puncture. Kœmpfer, a physician who accompanied a Dutch embassy to Japan in 1691 and 1692, informs us that, in cases of colic, the Japanese make nine punctures over the liver;—in three rows of three each, about half an inch from each other. He adds, that he himself frequently witnessed the instantaneous cessation of the pain, as if by enchantment. The Orientals do not, however, employ this operation in affections of the abdomen only. In tetanus, convulsions of all kinds, apoplexy, gout, rheumatism, swelled testicle, gonorrhœa, and fevers both intermittent and continued, it is also celebrated among them;—enjoying credit,—like all remedies of undoubted efficacy in certain diseases,—for power which it does not possess over others.

Owing partly to the frightfulness of running needles into the flesh, and the high improbability of any benefit from such a practice, a hundred and seventeen years elapsed before any European practitioner made trial of it. Dujardin, in his " Histoire de la Chirurgie," and Vicq-d'Azyr, in the " Encyclopédie Methodique," mentioned it about a century after Ten Rhyne had published; but only to congratulate the world that the statements of the latter, and of Kœmpfer, had not induced any one to practise it. The first European trials were made by Dr. Berlioz of Paris, in 1810. Its power proved so extraordinary, that he employed it very extensively; and numerous French practitioners imitated his example, with the same results. A body of similar English testimony followed; and acupuncture affords a striking instance of a good remedy discovered from groundless hypothesis, and condemned, without a single trial, for more than a century.

The needles employed in Europe are of steel. They are long and fine; and are furnished either with a knob of sealing-wax at their head, or (which is most convenient) with a little handle of ivory or wood, screwing into a sheath for the needle. They are best introduced by a slight pressure, and a semi-rotatory motion, between the thumb and fore-finger; and are withdrawn by the same motion. The pain is very slight; and often absolutely nothing. The period during which the needle remains in the part, is a matter of great importance. The pain may, indeed, cease instantaneously; but more frequently it does not, till the needle has remained some time; and my own experience accords with that of others,—that one needle, remaining an hour or more, is far more efficacious than several speedily withdrawn. I usually allow the needles to remain one or two hours; and I have known them to remain twenty-four hours, without any ill effect. I have usually found the operation requisite a second time; and, in one case, lumbago did not yield till the ninth repetition. The modus operandi of acupuncture is unknown. It is neither fear nor confidence; since those who care nothing about being acupunctured, and those who laugh at their medical attendant for proposing such a remedy, derive the same benefit (if their case be suitable) as those who are alarmed, and those who submit to it with faith. Neither is it counter-irritation; since the same benefit is experienced when not the least pain is occasioned, as when pain is felt. Galvanism, likewise, fails to explain it; because, although the needle frequently becomes oxidated, and affords galvanic phenomena, while in the body, these phenomena bear no proportion to the benefit derived; equally take place when acupuncture is produced on a healthy person; and do not take place when needles of gold or silver are employed; though the latter are equally efficacious with those of steel.—*Dr. Elliotson, in the " Cyclopædia of Practical Medicine;" Volume* I.; *Pages* 33 *and* 34.

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